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ABSTRACT

This is a self instructional package on the subject of self instruction. The package consists of four units: (1) the introduction, rationale, parameters, and definitions of self instruction; (2) planning and designing a self instruction package; (3) revising and individualizing a self instruction package; and (4) updating, revision, and implementation. For each unit and/or section instructions are given, along with objectives, tests and other information. In some cases, the learner has options as to the mode of instruction. For example, some of the presentations are in the form of slide presentations, videocassettes and written activities. (WCM)

new river community college

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PREPARING SELF INSTRUCTIONAL PROGRAMS : A SELF INSTRUCTION APPROACH UNIT 1

ED 092176

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PREPARING SELF INSTRUCTIONAL PROGRAMS:

A SELF INSTRUCTIONAL APPROACH

NEW RIVER COMMUNITY COLLEGE

JUNE, 1973

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Forward:

The following is a self instructional package on the subject of self instruction. The package consists of four units:

Unit I Introduction, Rationale, Parameters, Definitions of Self Instruction

Unit II Planning and Designing a Self Instruction Package

Section 1 - Preliminary Planning Stage

Section 2 - Planning Stage

Section 3 - Design of the Presentation

Section 4 - Production of Materials

Section 5 - Evaluation of Package

Unit III Revising and Individualizing a Self Instruction Package

Unit IV Updating, Revision and Implementation

Section 1 - Package Evaluation

Section 2 - Package Updating and Refinements

Section 3 - Major Package Revision

Section 4 - Package Implementation

Package Evaluation Form

For each Unit and/or sections instructions are given, along with objectives, tests and other information. In some cases you will have options as to the mode you can follow. For example, some of the presentations are in the form of slide tape presentations, videocassettes, and written activities. Start at the beginning with Unit I and continue in order throughout the rest of the package.

D.M.M.
June, 1973

U N I T I

GENERAL CONTENT DESCRIPTION

Introduction to Self-Instruction, Rationale of Self-Instruction, Parameters of Self-Instruction, Definitions, and Media Formats for Self-Instruction.

PREREQUISITE

None.

TABLE OF CONTENTS

I. Instruction for using Unit I

II. Learning Objectives

III. Pre-test with answers

IV. Self-tests with answers

V. Copy of script

VI. List of Definitions

VII. Media Formats with advantages and limitations

IX. Bibliography and selected readings

X. Slide-tape presentation

INSTRUCTIONS FOR USING UNIT I

1. Take the pre-test if you score ___% or better skip Unit I and continue to Unit II.

2. If you score below ___% you have the following options to complete Unit I.

a. Read the material (script) and take the post-test.

b. Read the material (script) and use self-test materials and then take the post-test.

c. Go through the slide-tape presentation and then take the post-test.

**d. Go through the slide-tape presentation, using the optional self-tests and then take the post-test. **recommended

3. If ___% is not scored on the post-test continue using program until ___% is reached. When ___% is reached continue to Unit II.

LEARNING OBJECTIVES

1. The learner will distinguish between the terms self-instruction and individualized self-instruction as stated in this presentation.

2. The learner will state at least two changing functions of the role of the teacher, where the teacher is involved in self-instruction.

3. The learner will list the four primary purposes for self-instruction as described in this presentation.

4. The learner will state two basic conclusions from the research on self-instruction presented in this lesson.

5. The learner will state at least five parameters that basic self-instruction programs should contain.

6. The learner will state the two conditions which determine if the use of media is advisable in self-instruction materials.

7. The learner, given a list of media formats, will state one advantage and one limitation for each type mentioned.

8. The learner will define self-pacing, self-contained and systems approach as used in connection with self-instruction programs.

Learning Area Taxonomy: Cognitive

PRE-TEST

1. The available research on self-instruction and self-instructional programs has shown

   A. Self-instruction programs are always effective.
   B. Self-instruction programs are never effective.
   C. Self-instruction is as good as traditional modes of instruction.
   D. The research results are inconclusive as to effectiveness.

2. List four parameters that basic self-instruction programs should contain.

   A.
   B.
   C.
   D.

3. Name two functions that a teacher will be doing in an operational self-instruction program.

   A.

   B.

4. List the two conditions which are determining factors in the selection of media in self-instruction programs.

   A.

   B.

5. List three reasons for incorporating self-instruction into an instructional program.

   A.
   B.
   C.

Score one point for each part--total = 12 points.

PRE-TEST ANSWERS

1. D

2. A systems approach
   Diagnosis of student competencies
   Diagnosis of content
   Self-contained
   Variety of materials
   Self-paced
   Course objectives written as behavioral objectives
   Evaluation and revision built in.

3. Facilitator
   Diagnoser
   Prescriber
   Motivator

4. If media selected is best way to communicate information.
   If media is manageable by the students.

5. Remedial work
   Enrichment activities
   Alternative methods for learning
   Schedule flexibility
   (Give teachers time to work individually with students.
   Self-instruction can handle routine assignments)

SELF-TEST # 1

Classiry each of the following instructional situations as primarily teacher-centered or as primarily student-centered instruction.

Use the symbols T (teacher-centered) and S (student-centered).

_____1. Lecture hall

_____2. Laboratory

_____3. Library

_____4. Class assignment

_____5. Learning kit

_____6. Group projects

_____7. Letter grades

_____8. Pass/fail options

_____9. Nightly homework

ANSWERS: 1. Teacher, 2. Student, 3. Student, 4. Teacher, 5. Student, 6. Student, 7. Teacher, 8. Student, 9. Teacher.

If you had difficulty in classifving the above items, review the characteristic effects of self-instruction in student-centered learning. Obviously, many student-centered strategies have been utilized in traditional courses.

SELF-TEST # 2

For each of the following pairs place an X by the one which comes closer to the definition of self-instruction.

_____1a. Student chooses alternative paths (reading in textbook, working at a lab station, viewing and hearing a slide-tape) during a scheduled classtime period.

_____1b. Student goes to the audio-visual center at his convenience and views a slide-tape presentation, stopping and reviewing until he masters the material.

_____2a. Student is assigned a chapter to read and takes the test when he has completed his study of the chapter.

_____2b. Student is given the choice of reading an assigned chapter and/or one of several alternative references and takes the test on an assigned day.

You were correct if your X's appear by 1b. and 2a. Self-instruction allows the student to learn at his own rate and perform when he is ready.

SELF-TEST # 3

1. List two statements which show the uniqueness of self-instruction over other types of instruction.

   A.

   B.

2. Four purposes of self-instruction would include:

   A.

   B.

   C.

   D.

ANSWERS:

1. A. Analysis of entering and terminal behavior

   B. Self-pacing

2. A. Time for individual work by teachers

   B. Enrichment

   C. Remedial work

   D. Alternative learning experiences

   E. Flexible school schedules

SELF-TEST # 4

For each of the following pairs place an X by the one which comes closer to the definition of individualized self-instruction.

_____1a. Student reads one of several references.

_____1b. Student reads an assigned chapter in the textbook.

_____2a. Student works from a selection of alternative activities contained in a learning packet.

_____2b. Student uses a slide-tape instructional presentation in the audio-visual learning center.

ANSWER:

You were correct if your X's appear by 1a and 2a. Individualized self-instruction provides the learner with alternative learning activities from which he selects the mode with which he feels most comfortable. Now, which of these two (1a or 2a) best fits the definition of individualized self-instruction?

Answer: 2a. In answer 2a, the student chooses from several prepared instructional activities.

You should now be able to add an individualization factor to a self-instruction item. Try it!

Self-instruction: The student goes to the audio-visual center and views a slide-tape presentation, stopping and reviewing until he masters the material.

Your added individualization factor: _____

Self-Test # 4 (continued)

Answer: The individualization factor will add the dimension of alternatives to the self-instruction item. This may be done by adding another activity introduced by the word "or." The statement could also be changed by adding "As one alternative" or "The student may choose to go."

SELF-TEST # 5

Place an X in front of each item which represents a parameter of an effective individualized self-instructional program, as defined in the preceding material. (Ten items should be marked X.)

_____1. Systems designs

_____2. Non-systematized designs

_____3. Teacher-centering

_____4. Student-centering

_____5. Time-limits

_____6. Individual self-pacing

_____7. Performance-defined objectives

_____8. Activity-defined objectives

_____9. Grades

_____10. Credit for completion

_____11. Variety of ways and resources to complete objectives

_____12. An established optimum or "best" learning path

_____13. Teacher diagnosis of course content and pre-requisites

_____14. Teacher-presentations of course material

_____15. Teacher diagnosis of student competencies

_____16. Teacher prescription of individual student's learning path

_____17. Monitoring of student progress

_____18. Supervision of student progress

_____19. Revision to update and improve and further individualize program

ANSWER: X's should be placed by items: 1, 4, 6, 7, 10, 11, 13, 15, 17, 19.

INTRODUCTION

Learning can be exciting when the student plays an active role. (1) The student will be active when he is personally involved in learning procedure. (2) Self-instruction replaces emphasis on teacher presentation with emphasis on student learning potential. Other students neither leave the learner behind nor hold him back.

(3) Self-instruction is a learning strategy which redirects school activity from teacher-centered curriculum to student-centered curriculum

(4) Self-instruction, if properly done, can increase:

1. Student responsibility for learning
2. Student independence
3. Student participation in the learning process
4. Student opportunities for decision-making
5. Student opportunities to experience success
6. Student self-concept as a learner
7. Student self-evaluation skills
8. Student practice in directing his own actions.

(5) Self-instruction could reward:

1. Student persistence
2. Student self-discipline
3. Student concentration.

(6) Self-instruction may be able to reduce:

1. Student regimentation
2. Student frustration

3. Student failure

4. Student competition

5. Student conformity.

(7) Self-instruction can be made available in many forms. Different models can be developed to meet the needs of each individual. (8) However, not all forms of self-instruction work for everyone. Good self-instructional material demonstrates creative thinking, self direction, self identity and critical thinking. (9) If a student passes a pre-evaluation satisfactorily he may advance to the next level. He makes decisions for himself. On the other hand there are no penalties for wrong decisions. The learner may review at any point in the process. (10) Self-instruction allows each student to learn in a way that is the best method for that student. A teacher chooses the best instructional techniques for a particular concept. (11) One of those choices, self-instruction, allows the student to progress at different rates and work at different levels. (12) In individualized self-instruction the student selects from a variety of choices available from options designed to develop a specific ability or skill.

(13) Learning materials alone will not motivate a student's interest, therefore one role of the teacher in self-instructional education is to positively affect the amount of learning that occurs. One of the teacher's main concerns is to encourage interest in various subjects. In self-instruction the student occasionally needs extra motivation; it is the teacher's obligation to give more meaning to learning.

(14) Teachers tend to plan and present material that is primarily designed for group rather than individual participation. Time, planning

and student interest affect the teaching procedure. Yet it is not economically feasible to expect one teacher to teach a classroom of thirty or more and be able to reach each and every student with all the available resources. Self-instruction can alleviate this problem. (15) In a self-instructional program the teacher becomes a facilitator who diagnoses, consults with students, prescribes, and evaluates as necessary.

(16) The following self-instructional packages compile information for teachers in order to help them incorporate self-instruction methods into their programs. The teacher guides the self-instructional program so that the student's performance is measured. Then, through evaluation, diagnosis, prescription and instruction, the teacher insures success for the student in reaching the level of performance required.

(17) Self-instruction forces educational planners to restructure content into student-manageable blocks or modules which are logically ordered for self-mastery by the learner.

(18) The self-instructional program must adapt its goals to meet the needs of all who want to learn. To do so, the learning must not only be self-pacing. (19) It must also have sound instructional sequences and include evaluation techniques which establish its reliability.

(20) If education is to satisfy society's demands that its members be "life-long learners," learning must challenge, interest, and encourage exploration of a wide variety of subject areas. (21) Solutions must produce "a broad range of resources which can produce learning" and provide the "means for allowing the learner to individualize these

resources." Each designer of an instructional package must operate as an educational technologist. One of the goals of this self-instructional program is to help prepare you for that role.

RATIONALE

Self-instruction is unlike other technological innovations because it was developed explicitly for education. (22) Films and television, for example, were first developed primarily to entertain, then later were adapted for use in education. (23) Films and television and other materials were primarily developed for large group use whereas self-instruction programs primarily focus on the individual student. (24) It is a unique innovation because it provides for analysis of entering and terminal behaviors, builds content into a presentation along the lines of definite teaching strategies, and, most importantly, allows for self-pacing. (25) Its advantages are manifold: 1) Teachers are given time to work with individual students, diagnosing, inspiring, motivating and assisting them on a one-to-one or small group basis; 2) Teachers are given time to enrich or supplement lessons or to provide remedial work; 3) Teachers can provide opportunities for alternate learning experiences in and out of the self-instructional program; and 4) Teachers can use self-instruction to create more flexible school schedules. (26) While self-instruction serves as a valuable adjunct to a general educational plan, it may prove inadequate to the entire teaching task in many content areas. Combined, however, with other techniques and innovations it represents an important teaching strategy which will increasingly

serve as an alternative mode of instruction. The magnitude of research into self-instruction, however, gives sometimes conflicting results on its effectiveness.

(27) In 1973 edition of Instructional Technology Its Nature and Use, Walter Wittich and Charles Schuller summarize a systematic overview of the research findings in the thousands of studies conducted since 1955. Substantial evidence exists that carefully planned and appropriately used media (film, graphic materials, audio materials, educational television, slides, filmstrips, models, real objects, and programed materials) increases student achievement of learning goals. From this evidence they generalize that "Individualized learning modules can be devised which permit learners to proceed at their own pace and learn significantly more information through self-tutorial involvement than if they were bound to keep to the pace of large group instruction." Such modules would incorporate media. (29) They conclude that the "interrelated media selected in terms of goals to be achieved facilitates learning outcomes which reflect with significance the reinforcing effect of such multimedia learning systems" (Wittich and Schuller, 1973, 34-5).

(30) Other writings describe the design of particular individualized programs and their operation in specific locations. These projects are as varied as the environments in which they are conceived. Such projects are proliferating without, as yet, sufficient research to establish the efficiency of one approach over another. The same is true of the packaged materials developed within these programs. If one considers the variables involved the dearth of valid research evidence is understandable.

(31) Yet many of the operative self- or semi-self-instructional programs and materials are being judged successful. The question being asked of them is "Can they do the job?" and the answer is a qualified "Yes." Such questions as "How well do they do the job?" are answered for some of the specific programs. Answers to the question "How much better can they do the job?" are often inconclusive.

Some applicable research in programed material is being done to determine which student characteristics parallel success in which situation, but as yet the findings are inconclusive for general application to other strategies.

(32) Many programs of self-instruction in basic developmental skills exist at the elementary school level. Evidence on the results of these highly structured programs indicates success, but is validated only for elementary school populations. On the secondary school level one finds many variations of packaged materials in skills/task subject areas and some in cognitive areas such as social studies. On the college level most seed programs tend to be in fields such as 1) audio-visual teacher-education, 2) science skill and cognitive areas, and 3) vocational-technical areas. Here evidence of success represents specific student groups rather than population samples. (33) Community colleges exhibit the greatest growth in the use of self-instructional programs on the higher levels of education. (34) One system, the AVT plan (which emerged from Postlethwaite's Audio-Tutorial System), has been widely applied over many subject areas at Lansing Community College in Michigan. In this mediated tutorial system learning packages are extensively used.

Performance levels (in one course, secretarial skills, but not on specific packages) were significantly better than those achieved by students in traditional classroom sections (Wittich and Schuller, 1973, 669).

Many programs on all levels utilize self-instructional learning packages. Two types, common in secondary schools but adaptable to post-high-school use are TLU (Teacher-Learning-Units) and LAP (Learning Activity Packages). Samples of these packages indicated that the level of media involvement is still low. On the college level the audio-tutorial type presentation seems to predominate. These packages rely heavily on slide-tapes or 8 mm film cartridges. As yet there is no conclusive evidence which establishes the superiority of one type of package over another. (35) The key to design of a good package still rests in accurate analysis of objectives, logical breakdown into steps, and revision of procedures in the activity sequences. The absence of outside evidence to guide decision-making indicates the necessity for the inclusion of a comprehensive evaluative process in all newly developed packaged materials.

(36) In view of the fact that research findings do support the reinforcing effect of carefully chosen and appropriately used instructional media, however, it seems likely that the use of interrelated media built into the learning package can maximize the potential value of instruction for each student in a learning program.

(37) The accompanying handout briefly describes some of the many definitions which are found in the readings and research on self-instruction. In this presentation however we will stress two definitions: self-instruction and individualized self-instruction.

(38) Self-instruction is a teaching strategy which allows a student to pursue a learning objective through a prepared, self-contained sequence of instructional activities at his own pace.

(39) Individualized self-instruction provides the student with alternative learning objective sequences of instructional activities from which he selects a path in which he is most comfortable.

PARAMETERS

(40) What are the parameters of an effective individualized self-instructional program? What should all such programs include? All effective self-instructional programs include evidence of a systematized approach. (41) As presently constituted most self-instructional designs are an outgrowth of what is commonly called a systems approach. The systems approach is a logical step by step method for designing an instructional lesson or instructional package. The systems approach will be developed and expanded in Unit II.

Other aspects that a self-instructional program should include are:

(42) 1. Diagnosis of content which determines those skills which the student must successfully perform in order to master the subject.

(43) 2. Diagnosis of student competencies at the entrance of the programs which determines at what point he will enter the program. All effective self-instructional designs represent an orderly, comprehensive, systematic structuring of learning resources and activities which allow independent student pursuit and mastery of specific performance-defined objectives (Ely, October, 1972, 38).

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3. Activities which demand group interaction or teacher interpretation are distinguished from those which can be completely contained in self-instructional units (Ubben, February, 1970, 32).

(44) 4. Each unit or unit/segment is "self-instructional" to the extent that it is self-contained, that is, to the extent that any individual student may find the means to achieve the objective without outside help.

(45) 5. In an individualized self-instructional solution, objectives can be pursued individually in a variety of ways using a variety of materials. Media is selected to help the learner successfully achieve the objective (Frantz, February, 1972, 20).

(46) 6. In the self-instructional solution student accomplishment is tied to individual rates of progress rather than to elapsed time in the program. Progress is self-paced (Frantz, February, 1972, 20). A self-instructional unit developed as a segment of a time-limited course is self-paced within the unit. The estimated maximum time requirement is within the range of expected completion of the course. The unit is self-paced.

(47) 7. Course objectives are stated in behavioral terms which specify nature of performance, expected level of performance, and conditions of performance (as "behavioral objectives") (Frantz, February, 1972, 20).

(48) 8. A comprehensive task analysis precedes a selection of strategies. (The task is broken down into sub-tasks, the component steps which must be mastered to complete the over all task.)

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(49) 9. Evaluative procedures and instruments are utilized to monitor individual student progress within the learning sequences. In addition, provision is made for evaluation and revision of the program (content, objectives, tasks, strategies, sequences, resources and evaluation instruments) to maximize effectiveness and currency of the program (Frantz, February, 1972, 20).

(50) 10. Provision is made for the development of additional learning paths or sequences as needed to individualize the program.

FORMATS

(51) Media can play a vital role in the self-instructional program. Remember that old definition of the best education being a teacher at one end of the log and a student at the other? Such individualized instruction has long been a dream, considered out-of-reach in a society dedicated to education for all people! (52) Supplemented by media, one to one teaching may approach reality. The teacher can multiply himself with media. Furthermore, he can multiply himself at his best. He can use other teachers who have special talents to share, and have them available for any student at any time. He can then improve upon his best, correcting oversights and restructuring the learning events which he designs. The inconvenience of arranging for and technically accommodating a variety of media in his classroom is transformed into a convenience, each orchestrated lesson replicable at the moment of each student's readiness for it. (53) And finally, while the media patiently tutor each learner, all components proceeding at their optimum capacity, the teacher

is free to attend to those individual and small group needs which require his special attention, something too rarely possible before.

(54) By the addition of the technological dimension to his function as educational planner, a teacher's contributions are expanded and optimized. (55) While his students independently learn more thoroughly that which has been prepared for them, the teacher arranges the vital supplementary activities which provide follow-through and further fulfillment applications of what has been learned.

(56) Achieving optimum efficiency in the integration of different modes of media into educational systems is a persistent problem. The teacher must not be dissuaded from devising an instructional system because he feels inadequate. The systems approach provides for upgrading a program during its use so the teacher can proceed to make practical decisions which will improve with practice. (57) On the other hand, accurate selection based upon available information can 1) save time later and 2) increase the productivity of the package in its earliest stages.

Some of the technical difficulties teachers anticipate in introducing such a program to their students are not the specters we make of them. Students can be easily instructed in equipment use if necessary. Routines can be posted. Most students may find adaptability an advantage in arranging their study schedule. The change of emphasis from our convenience to his convenience enhances his interest as well as his sense of owning a share in his own learning.

Any package can contain any amount of media as long as 1) the included media are best ways of communicating the message and 2) the

mechanics of operation are manageable. Changes in types of activity and manners of response are essential in order to stimulate the learner. The object is to activate him as much as possible without frustrating his success with foolish delays or unrewarding operations. (58)

The accompanying handout has been compiled to provide you with a preliminary view of the most common media formats as well as their advantages and disadvantages.

DEFINITION OF TERMS

Audio-Cued. Audio-cued learning consists of recorded explanations, directions, descriptions and instructions to guide the listener's learning activities. The inclusive term covers audio-tutorial and audio-visual-tutorial systems. At the present time, audio recording-systems serve as the central connecting thread in multimedia systems (Wittich and Schuller, 1973, 355-56).

Audio-Tutorial System. (Postlethwait, Purdue). A teacher speaks in a personal tone on tape as to an individual student, guiding him through a sequence of learning experiences. The student, working from a self-studies-station, may be directed to read textbook or supplementary materials, to perform tasks or experiments, to examine or manipulate materials and/or to listen to short lectures or discussion. This system is part of a program which incorporates laboratory instructions, seminars, and sessions and optional assembly sessions (Beckman and Janke, May, 1967, 243).

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Audio-Visual-Tutorial (AVT). A further development of the Audio-Tutorial system, the AVT form of instruction is a highly individualized approach replacing traditional classroom instruction in several subject areas. The student begins a course at any time, takes placement tests and is given a prescription sheet indicating which packaged units he is to take in an appropriate order as provided by an attendant. He practices, repeats, and gets assistance as necessary. He takes self-administered progress check tests and at the completion of the course takes a comprehensive test checked by his advisor.

Contract Method. The contract method is a form of individually diagnosed and prescribed instruction which allows the incorporation of small-group activities into individual programs. Students, having determined educational objectives, select resources, activities and techniques through which they will learn, apply learning and share learning. They assess their own progress, and cooperate with teachers in the final assessment (The Individualized Learning Letter, February 22, 1972, 5-6).

Coursewriter. Coursewriter is an IBM system in which a variety of audio-visual devices is made available in any order in a computer-based materials delivery system by the operation of a limited number of computer codes. The advantage of the system is its great potential for adaptation to any type of course; it is very versatile. It allows a conversational approach and also provides continuous evaluation of both student and the student program planned for him (Jensen, Autumn, 1972, 294-96).

Educational Technology. The main concern of the educational technologist is to facilitate and manage human learning by systematically identifying, organizing, developing and using a complete range of learning resources and processes. One important function of the educational technologist is to identify existing resources, develop an instructional system, and arrange the delivery of both to the learner by managing both process and people (Ely, October, 1972, 36).

Independent Study. In independent study the school designates which students and subject areas or courses are eligible for credit to be earned in individual study pursuits. The student, however, is the one who determines instructional objectives and activities to be used in his project. Success depends upon accurate diagnosis of student and project needs. These programs are leveling and self-pacing (Dunn, November, 1972, 54).

Individually Diagnosed and Prescribed Instruction (IPI). Objectives and skills are prearranged sequentially on a continuum starting at simple and ending at complex, and then packaged. After the student has been diagnosed he enters the sequence at his readiness level. He proceeds through the material at his own learning rate. The school provides diagnosis, method, material and objective (Dunn, November, 1972, 53).

Individualized Self-Instruction. Individualized self-instruction provides the student with alternative sequences of instructional activities from which he selects a path to the learning objectives in which he is most comfortable.

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Instructional Packages. Instructional packages are comprehensive delivery systems. The package delivers the stimulus. The purpose is to stimulate specified learning. The package also delivers either the material to learning with or direction to the materials. The package finally delivers completion or closure--the satisfaction of the need. Learning packages have the following characteristics: Each unit contains a set of teaching-learning materials focused on a learnable skill or idea. Behavioral objectives in the package emphasize performance. Learning resources using a variety of media approaches are included to be independently operated by the package user. Student evaluation devices provide pretesting, self-testing, and post-testing (Ubben, February, 1970, 31).

Learning Activity Packages (LAP). The learning activity package provides the student with specific behavioral objectives and the means to meet them. The LAP also explains the value and nature of the included activities and refers the student to available resources which will help him achieve the desired goals (Steward, February, 1970, 56).

Media Software and Hardware. Software carries information on cards, tapes, slides, films, etc. Hardware carries software making it available on playback machines, print-outs, screen, etc.

Modules. Module is a term designating a small part which is in itself a standard unit. Similar terms are unit, segment, package, etc. (De Stefano, October, 1965, 4).

Performance or Competency Based Instruction (PBI). This term was coined to identify learning precisely defined by outcomes. The learner is held accountable for specific criterion performance. He is informed

in advance of behavioral objectives, performance standards and assessment modes. All the included instruction pertains directly to attainment of criterion levels (Hawsam, April, 1972, 35-40).

Personalized Instruction. The student sets his own learning objectives but the school provides a framework of available resources and specifies both learning materials and learning methods. Once the student has been diagnosed and his program established by the school, he enters, follows and completes it at his own rate of speed (Dunn, November, 1972, 54).

Program for Learning in Accordance with Needs (PLAN). The teacher and student prepare objectives based upon the student's ability, interest and previous performance. A file of "teaching-learning-units" provides instructional material. A computer system then records data about the student and provides imput in both further selection and decision making (Jensen, Autumn, 1972, 296).

Programed Instruction. A Skinnerian (most common type) program consists of an ordered sequence of small step stimulus items designed to lead the student through a series of covert constructive responses (immediately reinforced by correct answers) toward a thorough mastery of specified skills or understandings. The "program" may be contained (delivered) in a book or in a machine format. Such programs are revised until effective for the vast majority of potential users in order to "guarantee" results. Some programs incorporate more than one learning path as determined by student proficiency in making correct responses. The highly favored media accompaniment is 8 mm film formats (Edling, 1964, 98-99).

Self-Directed Instruction. The student chooses learning methods, procedures and materials but the school determines general objectives, sets objectives for the student and provides resources in a structured environment. Diagnosis, leveling, and self-pacing accompany self-selection of learning activities (Dunn, November, 1972, 55).

Self-Instruction. Self-instruction is a teaching strategy which allows a student to pursue a learning objective through a prepared, self-contained sequence of instructional activities at his own pace.

Sound Syncronization. In audio-visumatic delivery systems the visual (slide) changes which accompany and aural (taped lecture) are cued automatically by (silent) signals included on the tape. One tape can cue more than one slide projector at a time.

Still Pictures. Flat pictures are still pictures which can be used as they are without a projector or view finder (including photographs and illustrations either original or published). Other still pictures are projected pictures which are not speeded up to give the illusion of motion, i.e., not "motion pictures."

Teaching Machines. Teaching machines are mechanical or electronic devices for presenting programed instruction to a learner. The simplest machines provide the uncovering of one item of the series at a time, and the subsequent uncovering of the correct answer for that item. The simplest machines contain linear (straight line, unbranched) series.

Work-Study Programs (Parkway School) or Internships (Community Contribution Programs). These programs incorporate remunerative and non-remunerative emplovment in the outside community into the learning environment (Dunn, November, 1972, 52).

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DISPLAY MATERIALS

(Visual aids, posters, flannel boards, flip charts, bulletin boards)

Description for use in Self-Instruction

Display presentations have limited self-instructional use unless the situation has one of three characteristics: 1) a permanent or semi-permanent location near the study or work station, 2) storage space plus sufficient space to set it up in the study or work station, or 3) small enough size to be included in the package itself. The larger the display the more expensive it is to house. When removed it is often lost!

One of the advantages of the large semi-permanent display board is that it allows the use of those actual samples of which quantities are extremely limited, fragile or expensive. We recommend the inclusion of display articles or pictures in the packages themselves in order that flexibility be maximized. However, additional out-of-package displays are recommended to show relationships which are too large for the package, one of a kind material or to demonstrate processes by a lab or work station. In any case, mounted material has certain obvious advantages over loose material.

Advantages for Self-Instruction

1. Mounted material is less subject to damage or loss.
2. Mounted material can be more easily labelled.
3. Mounted material is easier to handle.
4. Mounted material can be set up to show relationships or progressions.
5. Mounted material can utilize the sense of touch as well as the sense of sight (3-D objects have high effect in learning visual identification).

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7. Mounted material can combine materials to allow flexible presentations (3-D models, moving parts, electric contact responses, flip chart type overlays).

8. Mounting is a convenient method to quickly utilize materials already on hand (serves immediate program needs).

9. Mounted materials can serve until time-consuming software (film, TV) can be produced. Also they can serve as a pre-development process for film material being planned (used like a storyboard).

Limitations for Self-Instruction

1. Displays of any complexity tend to be bulky, difficult to store, and inconvenient to set up, reducing mobility of the package.

2. Displays to be handled a lot must be sturdy and durable.

3. 3-D objects have limited value in the learning of factual information, the learning of principles, concepts, and rules or procedures, the mastery of psychomotor acts and value formations.

HANDOUTS

Definition

Handouts are documents containing overviews, purposes, instructions, directed activities, supplementary activities, and follow-ups to organize and initiate learner activity.

Description for use in Self-Instruction

One might call handouts a handy form of advance organizers. They can contain diagrams and drawings but are primarily verbal. The poor reader profits from visual aids which are independent of "reading" pre-requisites, or which clarify reading requirements.

While visuals clarify meaning, handouts have the advantage of easy duplication for students to keep. It is also possible to present the same handout material at different reading levels in different packages.

Advantages for Self-Instruction

1. Easily revised and updated.
2. Relatively inexpensive reproduction.
3. Available for student reference.
4. Easily stored.
5. Possible to color code sections to the instructional package.
6. Easily referred to.
7. Can vary in complexity.

Limitations for Self-Instruction

1. Size restrictions usually 8" by 11" to 14." (The container for a slide carrousel is 9.5 by 9.5).
2. Little inherent motivational value.
3. Cannot be automated to other media (student must manage connections by written cues).

GAMES, SIMULATIONS AND SIMULATION GAMES

Definitions

Games stimulate by arousing competitive instincts. Simulations reproduce certain aspects of real life situations in order to imitate experiences related to a real life situation which is too hazardous or too costly to provide or otherwise unavailable. A simulation game combines the essences of imitated real life experience with the contest elements of games being played according to rules. Role playing is a simulation activity which can be set up to study an emotion. Done in a situation in which rules are used to influence outcomes, situations themselves can be studied.

Description for use in Self-Instruction

Games (mathematical games, puzzles, work plays), can be individually played against an automated opponent or against a student's previous achievement. The purpose of the game might include the mastery of a process or of a vocabulary.

A self-teaching simulation might include use of an airplane trainer cockpit. The learning station itself might duplicate aspects of life situations related to particular subject areas. Film or TV tape, using an "eye view" can intentionally emphasize direct real world perceptions by their indirect representation of real world stimuli. A globe is a simulation, but a film of earth from a satellite is closer to the real thing, thus a better simulation.

A self-teaching simulation game is a far more complex operation and most successfully developed ones are played on computers.

Advantages of Games, Simulations, and Simulation Games

1. Increased student activity, motivation and response.
2. Encouragement of interaction with material.
3. Strengthening of connections between material learned and applications outside school in both career and social realms.
4. Wide application for different age and achievement levels.

Limitations of Games for Self-Instruction

1. Games require extra playing time.
2. Complexities may require extra preparation of or help for lower level students who are motivated to play but encounter difficulties.
3. Games can be difficult to design well and need extra shakedown time to work out bugs and hangups.

FILMSTRIP

Definition

Filmstrips are composed of a series of still picture negatives prearranged on a transparent strip of 35 mm film which is unrolled through a small projecting machine and stopped while each of the 20 to 50 items is projected.

Description for use in Self-Instruction

Filmstrip projections are much like slides with one exception. Slides can be scrambled; filmstrip pictures are locked into a certain order. Thus, filmstrip projections are not as flexible as slide projections, but they do have advantages.

Projection speed can be set to an accompanying tape, or the student can review the pictures pacing the film at his own speed. A large number of film strips are available through catalogue orders. Teachers could easily provide their own taped commentary to increase the value of the commercial filmstrip to their own courses. Pictures on a filmstrip will have pre-established orders and relationships.

Advantages for Self-Instruction

1. Projectors and software are easily stored and moved.
2. Filmstrip is less expensive than other forms, and convenient to set up and use.
3. The small size filmstrip container takes up little space in a package.
4. A teacher's slides may be collated and reproduced as a filmstrip through local film developers in a relatively short time and usually at low expense.

Limitations for Self-Instruction

1. Filmstrips are vulnerable to dirt or scratching from careless manipulation.

2. Up-dating or revision of material is inconvenient compared to slide arrangements.

3. Preparation more difficult than slides as they require extra laboratory services and are more than twice the cost of slides per frame (picture).

AUDIO-RECORDING AND PLAYBACK

Definition

The bulk of teacher-prepared material used in self-instruction is recorded on magnetic tape equipment. Tape format, especially the cassette type, is superior to a record-player format. Records are subject to damage by repeated use, while record content can be easily transferred to tape and duplicated. Portable tape recorders are lightweight machines small enough to be located on table tops, in study carrels or at work stations. Tape recorders are often built into the format of other media (such as the sound projector). Material is recorded on one-quarter inch magnetic tape stored on an open reel or in a small enclosed plastic container (cassette). Open reel tape must be threaded through the recording/playback mechanism and attached to a take-up reel on a reel to reel machine. Cassette tape is a self-contained unit in which take-up and rewind are automatically performed by push button operation of a cassette machine. Some tape cassette machines provide for recording on the tape, and others provide playback only. Both types of machines provide a numbered (index) counter which helps the student locate

particular sections of the recording plus points at which the student stops the tape for review or other activities. Earphones may be jacked into the recorder to provide individual listening in multi-station laboratories or classrooms. More than one set of earphones can be jacked into the player to accommodate small group use.

Description for use in Self-Instruction

Audio learning devices provide optimum conditions for a self-instructional program. They improve upon the written handout by increasing student sensory participation and facilitating greater attention. Tapes can be used with or without handout material.

Advantages for Self-Instruction

1. Machines and tapes are easily transported to live lectures, speeches, discussions by teachers, students or resource people for replay in an instructional package.

2. Tapes are easily and inexpensively duplicated for inclusion in multiple packages simplifying problems of simultaneous use by many students working at individual rates of speed. Duplication allows a copy of a copy of a tape to be sent away for compression without disrupting use of original recordings. Compressed tapes speed delivery without distorting sound, thus allowing a faster pace for faster working students. (See disadvantages following.)

3. Tapes are adaptable to many additional uses such as giving sequential instructions, providing musical background, natural sounds, or administering oral tests. Student answers or speeches may be recorded on tape, and erased later for another use.

Limitations for Self-Instruction

1. Good voice, pronunciation, and tonal variation are required in a recording. Recordings must be clearly reproduced. Learner must hear the message, listen to the message, respond to the message and demonstrate that he has mastered the learning intended.

2. Use of audio equipment can be overdone; it must be supplemented with other media to maximize its effectiveness. The recorded message is internally paced slower than most student reading rates. Compressed tapes which speed delivery without sound distortion are gradually coming into use with good results, but compression equipment is expensive and, at present, tape must usually be sent away for compression.

RECORD PLAYERS

Many commercially produced slide/filmstrip packages provide audio tracks in record formats. Record players are jacked into slide or filmstrip projectors at self-instruction stations. We recommend storage of records as a master copy and reproduction on tape cassette in the learning package.

INSTRUCTIONAL TELEVISION

Definition

Instructional television is an electronic multi-media delivery system with many components which can be subdivided into production and delivery components.

Description for use in Self-Instruction

Production components, which will be directly dealt with in Unit III, require complicated operations with complexities directly related to the level of quality desired in the product.

The product usually used in self-instructional packages is a TV tape contained in a cassette. TV tapes are multi-media products. Incorporated into the final tape can be: 1) studio-produced lectures/commentaries,

deomonstrations, and performances including supplementary graphics, charts, real objects, photographs, slides, films, and recordings; and 2) on-the-scene recordings (TV taped or filmed) of classroom events, and real life events.

TV tape represents an optimum method of fulfilling Marchall McLuhan's dictum that "We must orchestrate the media so that each does what it can do best."

Delivery components consist of a monitor containing a receiver tube which projects electronic impulses onto a self-contained screen, approximately five to thirty inches square, accompanied by a sound-amplified speaker system; and an accompanying video-tape-recorder (VTR) which plays the cassette-contained video tape on the monitor and allows the tape to be stopped, rewound and replayed at the user's desire. Ear-phones can be used to block sound out to all but the individual users.

Advantages for Self-Instruction

1. Video tapes can be erased and re-recorded to cut the time lag in upgrading content if other necessary equipment and material is available.

2. If the necessary equipment and know-how is available, video tapes can be very quickly produced (one day) and put into use in packages (the next day).

3. At the present time audio tracts serve as the linking media or central thread in multi-media systems but in the future this role will be subsumed in video tape formats, primarily 1) because it can incorporate sound simultaneously with the recording of any variety of visuals, and 2) will be readily available in cable retrieval systems.

Limitations for Self-Instruction

1. The TV tape is only as good as the production effort which went into it. Quality production requires specialized equipment. The more complex the production plan, the more qualified technical knowledge or assistance is needed. Furthermore, even for real-life-event recordings, a good product requires artistic knowledge of the principles of visual communication. More complex recordings require extensive pre-planning and pre-scripting.

2. Editing tapes requires specialized equipment and training in the use of that equipment. Mixing, and other more exotic operations, requires more of the same. These specialized procedures (such as the addition of special effects) are usually available with studio equipment; such equipment, however, often deals with the 1 or 2 inch tape formats, while transportable production units work with 3/4 or 1/2 inch tape formats. Each delivery system accommodates only one size of tape format at present.

3. Another limitation reflects directly the need of a student to feel personal contact with a teacher. Canned lectures can stir emotional resentment therefore incorporation of other media helps justify use of this mode and lessens the frustration caused by loss of immediate access and close relationships. As much as possible student questions should be anticipated and resolved to lessen frustration with the presentation. The systems approach includes this aspect under needs assessment and evaluation procedures.

PROGRAMED INSTRUCTION

Definition

Programed instruction is a strategy which organizes material into an exactingly sequenced pattern of stimulus-response steps. Each step is provided with immediate feedback, i.e., the correct answer to a question which the student has just answered. The key to programed instruction is the advancement of the student through such small increments of material that he can hardly avoid being right so that the correct answer is a reinforcement of his success in the program. The material

(software) car be contained in book, computer, or other teaching machine format including audio-visual formats. The provision of alternate paths can be built into any program at key question points allowing for differentiation of number, size, and type of steps in the alternate sequences.

Description for use in Self-Instruction

Programed instruction is individually oriented though highly standardized. The most successful application thus far is to the learning of basic developmental skills such as reading and mathematics.

The conversion of large blocks of material into the programed mode (break-down into tiny steps) can extend the time required to complete a course beyond the endurance of all but the most patient learner. On the other hand, used for smaller segments of complex material, programed learning components insure that no vital step will be omitted in the process of mastering a skill or concept. Congruent material utilizing motivational media can stimulate the learner to use those skills and to integrate them into mastery of larger blocks of learned material. Thus, the learner, whatever his own learning style, can be assured that he has successfully mastered the essential elements of a discipline and feel confident as he goes on to interact with other aspects of the curriculum.

Advantages for Self-Instruction

1. Logical sequencing of information into small concrete steps insures understanding; one specific idea leads to another. The subject is more meaningful because the student builds a repetroire of background information which allows him to mediate the new with the old. Learning takes place in the learner.

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2. Bold programed materials are highly effective in the learning of factual information; principles, rules, and concepts; visual identifications; and in the development of attitudes and opinion.

3. Commercial programs exist which can be 1) used to bring the student's developmental skills up to the readiness level a new course requires, or 2) used to supplement the material of a related course. Many tested commercial courses already standardized at great expense to the developers are a good buy if appropriate to a student's needs. Some of these courses are worked up into unique game-like situations which add a dimension beyond the individual teacher's resources to produce. Good tests for these programs are usually available. Self-pacing, immediate reinforcement, and step-by-step mastery make such programed material attractive. Programed texts are as easy to procure as standard texts.

4. The teacher is assured that each student has been exposed to a meaningful interaction with the essential elements of a course in a complete and logical way, and has valid evidence of each student's performance in the programed areas.

Limitations for Self-Instruction

1. Commercially programed products have proliferated so rapidly that not all programed materials represent the best content or the best method of mastering that content. Revision has not kept pace with new research findings. Imagination and innovation have been sacrificed to conservatism and exploitation (Edling, 1964, 101). Programed textbooks often lack involvement or are just "dullsville." Commercial outlets have not sponsored research on their own products.

2. Computerized program construction which offers the greatest flexibility and information retrieval capacities is considerably more expensive than printed program formats. It requires the services of an educator-computer-technologist. The teaching machine is merely a mechanized delivery device for printed programed-formats.

3. Programed materials are ineffective ways of presenting skilled-perceptual-motor acts. Programed instruction may lack the flexibility of other approaches. The student is a slave to the routes provided in the program. Pre-tests may allow certain designated material to be skipped but the student who finds the steps too small and too slow cannot effectively skip ahead on his own. The material allows for different rates but binds the student into a sequence of steps.

COMMUNITY RESOURCES

Definition

Community study involves students in first hand relationships with people, places, and things which exist in their environments. Community resources are humanistic (cultural and personal), scientific (natural phenomena, industrial processes) and technological (management and applications). In all of these areas one finds people, material, settings, tools, and other equipment in varying degrees (Ely, October, 1972, 38). Community-related studies can involve the student in hikes, tours, visitations and field work.

Description for Self-Instruction

Given that life-like learning experiences which allow the student to examine and question and become informed about his real-life environments (both natural and social) are a most effective way to legitimatize his in-school learning experiences, ways must be found to include community resources into self-instructional packages.

Two main ways suggest themselves: 1) bring the community into school and 2) send the student out into the community.

In method 1, community materials (pamphlets, meeting agendas, work schedules, etc.) and community representation (on slide, tape, film, TV tape, etc.) can be built into the package.

In method 2, the student can be directed to implement specifically designated and prearranged trips, tours, visitations etc., according to a pre-determined set of objectives and return to the self-instructional station to complete follow-up activities, or he can be given a set of

options to choose from, and a set of related objectives to choose from. In the loosest (not necessarily the worst!) sense he can be allowed to design his own extra-school community investigations, design his own objectives and even select his own method of reporting or sharing his findings. Self-instructional operations must not be restricted to in-school or easily-managed environments. In utilizing community resources in a program the package designer might include modules on the development of multi-media reporting. Self-instructional preparation in the use of various media (including artistic and literary products) to convey learning achievement is a most valuable accompaniment to supplement a student's natural motivations with sound technological support. Fortunately, many types and styles of media-materials on utilization of the different types have been and are currently being developed which might be incorporated into packages designed to relate them to a specific course or subject area.

If the student is to be freed of the regimentary and over-automated sensations of confinement to learning-laboratories, what better way can be found than to propel him out into the world in which he belongs and to which he will hopefully return, having experienced and recognized the relevance of the education provided him.

Advantages for Self-Instruction

1. Community resources are real-life materials. Community resources exist in fact and do not need to be "created" or "simulated." They are now experiences as well as indicative of future experiences.

2. Career orientation and expectations demand realistic knowledge of conditions. Community resources are subject of current publications and produce usable materials.

Disadvantages for Self-Instruction

1. Not all real world resources are of significant instructional value. Many important resources are beyond the reach of students. (Distance, money and time factors, for example). Publications and products of industrial or business outlets are usually commercials which present biased information.

2. Specialized materials may be inapplicable for course-related objectives. They are not suitable for the best media use.

3. Copyright laws interfere with the use of material.

4. Industries or organizations may be closed to free visitation or touring. Many communes, private homes, hospital patients etc., resent being used or manipulated by the curious, whatever the stated intention of the visitor or observer.

SLIDES

Definition

Slides are small photographic transparencies framed in separate flat 2" X 2" mounts (usually cardboard) for the purpose of still projection. Modern slide projectors automatically feed, project and remove the individual slides in the order in which they are stored in removable and storable trays.

Description for use in Self-Instruction (Curl, May, 1967, 24).

Students experience no difficulty in working with slides. If the slides are self-explanatory, or if they are accompanied by either handouts or a student controlled tape, the student can pace himself, repeating, skipping and viewing the material as necessary.

The tray or storage holder keeps the slides in the pre-determined order but allows them to be reordered at the will of the instructor. Slides are very adaptable for use with a combination of other media.

Advantages for Self-Instruction

1. Slides with handouts and slides combined with prerecorded tape are adaptable to a wide range of subjects and help insure understanding.

2. Slides have a number of uses. For example, multiple choice test questions can be posed on slides for use with standardized answer sheets.

3. By switching order and selection of slides, test answer sheets can be conveniently differentiated.

4. Slide changes in audiovisumatic systems occur during the recorded lecture when automatically signaled by the tape.

Limitations for Self-Instruction

1. Slides can be locked into order; therefore, they can be misplaced or lost without being readily missed.

FILMS

Definition

Films, also commonly called motion pictures, moving pictures, or movies are still pictures sequentially arranged on long strips of transparent film and projected at split second intervals. The film moves from one picture to the next while the projector's shutter is closed and the screen is black. The process is so rapid that the eye retains the image from one picture to the next, creating the illusion of motion in the mind. The film comes in several formats or widths. The 35 mm width film is shown in large commercial theaters. Feature films are ordinarily shot in 35 mm (or larger) film which allows large long panoramic shots with excellent resolution and rendition of detail. 16 mm width film has been commonly used for educational films. Feature films are reduced to 16 mm size for rental purposes. Most schools have been

equipped with 16 mm projectors. 8 mm film width was at one time a split version of the 16 mm film format. It had the same sprocket holes on one side (instead of both sides) and two sequential frames where the 16 mm film had one frame. The new "super" 8 mm format (Japanese "single" 8) redesigned the film sprockets and increased the picture size for a larger screen image. (The old 8 mm format is being phased out). The larger film formats can be reduced in size without loss of quality (with the exception that long shot details are less discernable on small sized screens, but if small (super 8 mm particularly) are "blown up" some graininess or fuzziness may be visible. Experience has shown however that the audience readily adjusts to the blown-up image if the camera work is otherwise competent. All of these film formats may be prepared to carry recorded material in an optical or magnetic strip on the side of the film which will be amplified by the sound projector on its contained speaker or through attached earphones.

Super 8 mm films can be contained in cassettes for replay on cassette projectors. There are however many different cartridge formats and care must be exercised in packaging film in the appropriate style cassette.

Description for Self-Instruction

Of the three film formats, super 8 mm film offers the greatest potential for self-instructional packages, especially now that projectors have been developed which contain the screen within the projector format. In some, (the picture may be projected through the screen rather than forward onto a small appendage screen) the way has been cleared for individual study of prepared cartridge contained films. Super 8 mm films are as effective as 16 mm especially on the smaller-sized screens

that are utilized by individual learners, and the super 8 is outstripping 16 in flexibility of formats (Wittich and Schuller, 1973, 473). Super 8 can now be packaged in a continuous loop cartridge with sound recorded on the film, or without sound on film but available on an accompanying cassette tape, common lengths being from 2 to 4 minutes for a single-concept film up to 20 minutes for a multi-concept film.

One compact film viewer will show the student 200 feet of continuous film loop which he can stop, reverse and advance again at will, repeating until he is satisfied.

In the same way that cost effectiveness recommending uniformity in equipment purchase has thrown the self-instruction market toward the tape recorder (over other audio systems such as record players) so has the same market elevated 8 mm formats over competing formats particularly in commercially produced self-instructional (programed) programs, even to the point of transforming all visuals (slide series, charts etc.) and audio visuals into the 8 mm format. The loss of flexibility may be inconsequential to a programer because his visual is tied to programed stimuli (Gerlach, June, 1965, 32).

Film is particularly useful for showing motion, showing relationships or giving additional impact to a topic.

Many special techniques can be used to handle content in unique ways: slow motion, time-lapse, magnification, double exposure, animation, etc. In the iconographic or kinestatic film (static picture added by flats and stills) the illusion of motion is shown by camera movement.

Advantages for Self-Instruction

1. Many valuable self-instructional 8 mm film formats have become available and are being productively used. Many 8 mm film titles are available with more coming.

2. 8 mm are less expensive to produce than 16 mm, yet finally out of the "home movie" class with sophisticated editing and sound syncronization systems are available commercially.

3. Equipment is simple to use.

4. Motion pictures have a high effect on the learning of procedures, principles, concepts, rules, visual identification and factual information, and also have effect in guiding skilled performance of perceptual motor acts and in developing attitudes and motivations.

5. Producing good 8 mm films is difficult but not impossible, given plenty of time, access to good technique and persistence.

6. Excellent medium for the individual or small group who wish to work independently for a high quality product which exhibits artistic values.

Disadvantages for Self-Instruction

1. Just as some programed instruction people are converting multi-media self-instruction usage into a single media (8 mm film) format, other instructional leaders see that the most sophisticated single-media delivery system for multi-media yet developed is the TV cassette tape. With closed and open circuit cable TV systems already over the horizon, the eventual picture is clear. In other words, if working alone for quality material and in no hurry, make films and outfit learning centers for TV first. (Films can be recorded on TV tape and TV products can be filmed!)

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SELECTED REFERENCES

Beckman, Richard, Janke, Robert, and Tanner, Gilbert. "Utilizing the Audio-Tutorial Approach." The Journal of Geography, May, 1967, 241-245.

Curl, David H. "The Self-Instructional Audiovisual Laboratory." Educational Screen and Audiovisual Guide, May, 1967, No. 15, 24-25.

DeStefano, Captain Peter D. "Breaking the Lock-Step in Laboratory Programs." N.S.P.I. Journal, October, 1965, Vol. IV, No. 8, 12.

Dunn, Rita S. "A Position Paper to Further Individualization of Instruction In the Schools." Audiovisual Instruction, November, 1972, Vol. 17, No. 9, 49-54.

Edling, Jack V. et. al. "Programed Instruction Today and Tomorrow." Four Case Studies of Programed Instruction, New York: Fund for the Advancement of Education, 1964.

Ely, Donald P., ed. "The Field of Educational Technology: A Statement of Definition." Audiovisual Instruction, October, 1972, Vol. 17, No. 8, 37-43.

Frantz, Nevin R. Jr., and McConeghy, Gary L. "Individualized Instructional Systems for Industrial Education." Audiovisual Instruction, February, 1972, Vol. 17, No. 2, 19-23.

Gerlach, Vernon S. "Programming AV Laboratory Instruction: The Process of Revision." Educational Screen and Audiovisual Guide, June, 1965, 30-32.

Hawsam, Robert B. "Some Basic Concepts." Today's Education, April, 1972, Vol. 61, No. 4, 35-40.

Individualized Learning Letter. "Some Questions and Answers On I.I." The Individualized Learning Letter, February 22, 1972, Vol. 1, No. 14, 5-6.

Jensen, John A. "Systems Approach and Instructional Strategies." Improving College and University Teaching, Autumn, 1972, Vol. XX, No. 4, 294-296.

Johnson. Donald Wm., Ed.D. "A Study of the Comparative Effectiveness of Programed Self-Instruction Versus the Demonstration-Laboratory Method in Teaching the Operation of Six Types of Audiovisual Equipment." Education, September, 1964, Vol. XXV, 1771.

BEST COPY AVAILABLE

Wittich, Walter A. and Schuller, Charles F. Instructional Technology Its Nature and Use. New York: Harper and Row, 1973.

Steward, Judith P. and Love, W. A., Jr. "The Teacher's Response to Technology and the Individualization of Instruction." Educational Technology, Vol. X, No. 2, 56-61.

Ubben, Gerald C. "A Look at Nongradedness and Self-Paced Learning." Audiovisual Instruction, February, 1970, Vol. 15, No. 2, 31-33.

new river community college

PREPARING SELF INSTRUCTIONAL PROGRAMS : A SELF INSTRUCTION APPROACH UNIT 2

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U N I T I 1

PLANNING AND DESIGNING A SELF-INSTRUCTIONAL UNIT

NEW RIVER COMMUNITY COLLEGE

JUNE, 1973

Prepared under contract by
College of Education, VPI & SU
David M. Moore, Project Director
Barbara Melosh
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U N I T I I

GENERAL CONTENT DESCRIPTION

A student involvement activity in planning and designing a self-instructional unit.

PREREQUISITE

Unit I.

TABLE OF CONTENTS

I. Instructions for using Unit II

II. Learning Objectives

III. Unit II, Section 1 - Preliminary Decision Stage

IV. Unit II, Section 2 - Planning Stage

V. Unit II, Section 3 - Design of the Presentation

VI. Unit II, Section 4 - Production Stage

VII. Unit II, Section 5 - Evaluation in the Pilot Stage

VIII. Package Organization Work Sheet (POW)

INSTRUCTIONS FOR USING UNIT II

The major purpose of this unit is to plan and design a package for self-instruction. Because this type of activity is hard work and there are few short cuts, there will be no general pre-test for the entire unit. However, there will be pre-tests and post-tests for some of the specific sections within Unit II. The student will have three alternatives for completing Unit II:

1. Use the step by step approach developed within this package (this is the recommended method).

2. Use the book Developing Individualized Instructional Material by Johnson and Johnson.* This is a different approach and is not necessarily recommended, however if you wish to use it, start at page iii and complete everything recommended.

3. Use the material in this package (1) and use Johnson and Johnson to supplement areas of the recommended package.

LEARNING OBJECTIVES

1. The learner will plan, design, and produce a self-instruction package based upon the content of the presentation or the book Developing Individualized Instructional Material.

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*Stuart R. Johnson and Rita B. Johnson, Developing Individualized Instructional Material, Westinghouse Learning Corporation, Palo Alto, California, 1970.

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2. The learner will be able to correctly write a behavioral objective complete with the essential three characteristics of behavioral objectives.

3. The learner will distinguish between objectives written in the cognitive, psychomotor and af[illegible]ive domains.

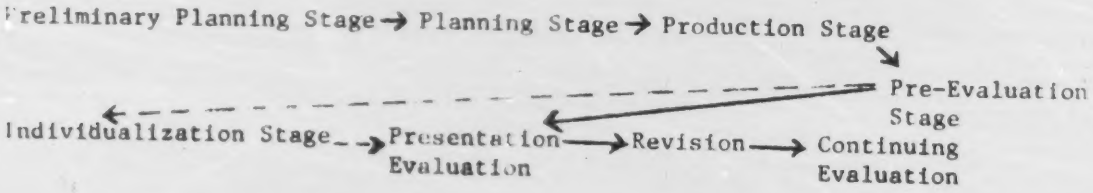
Learning Area Taxonomy: Cognitive, Psychomotor.

UNIT II, SECTION 1

PRELIMINARY PLANNING STAGE

Now that you have background information concerning self-instruction, let us get down to the task at hand, designing a self-instruction unit or package. The overriding objective of this unit is for the user of this material to design a package which could be used by his own students. Although there will be alternative routes available to accomplish this goal, the end product will be self-instruction packages ready for production.

Because developing self-instruction is not easy nor something that can be put together quickly, this unit will follow a step by step student involvement approach. By the end of the unit by using content guides, checklists and work sheets, the student will have completed the planning for a self-instruction package. The approach used will be based upon the following diagram:



As you will note later, this diagram will take into account methods for self-instruction as well as individualized self-instruction.

The first stage is the preliminary decision-making stage. As noted in Unit I not all activities or lessons avail themselves to self-instruction. You should have a reason for putting forth the effort to do so. There can be many purposes, an example is to provide important basic information outside of valuable class time. Sometimes routine classroom presentations can be a candidate for a self-instruction package. The students would get the same information but the teacher might then be able to use the class time in a more creative way, like small group projects or discussions. Another purpose for self-instruction could be a means to present additional materials for enrichment and for supplementary or remedial activities for a particular class or subject. This type of activity would allow the student in his own time and at his own pace to do remedial or enrichment activities. Self-instruction may be chosen to give a certain amount of flexibility in the school or class schedule. It might allow students and/or teachers to plan their schedules or time more conveniently for their personal needs. Flexible scheduling can be extremely important in classes with large registrations or in competency based programs in which students need the flexibility to be self-paced through the requirements. Giving the students an alternative method for learning may well be an additional reason for the outlay of time and expense in the development of self-instructional packages. Each teacher may use self-instruction for a specific reason or purpose which would not be of value to others.

But for whatever purpose selected, make sure in your own mind it is worth the effort.

Other preliminary decision-making activities which must be considered when thinking about the possibilities for self-instruction for a course or lesson are:

1. What parts of the content area are suitable for self-instruction?

2. What do you want the students to be able to do as a result of the presentation? (These are behavioral objectives and will be discussed in great detail later in this unit.)

3. What are the prerequisites for this course?

4. What are student needs as suggested by past experience with the course or lesson?

5. What level of entering information is necessary for success for this concept or idea?

6. What problems or difficulties have or (do) students have with the content?

7. What is the amount of material desired to be covered? (Note: it is advised to start small possibly thinking in terms of just one idea or one concept, you can always make more later, a single concept or idea may (1) take less time, (2) serve as a basis for additional ones and (3) be easier to manage by the student and to supervise by you.)

The time has come for you to make some preliminary decisions. We assume you have thought about some ideas or areas you might like to consider for self-instruction or you would not be taking this program. Using the following checklist and work sheet, decide on possible topics you wish to develop into a self-instruction package.

COMPLETE WORK SHEET #1 AT THIS TIME.

WORK SHEET #1

FACTORS TO CONSIDER IN THE SELECTION OF A SUBJECT SUITABLE FOR SELF-INSTRUCTION

Complete the following with as much detail as possible.

1. Using the following checklist, try to determine part or parts of your content area which might be suitable for self-instruction.

PURPOSES	Area possibility suitable in your content field
Enrichment activities (supplementary work)	
Remedial activities	
Routine activities	
Activities which would help make schedules more flexible	
Activities which need instructional alternative	
Other purposes	

2. What are prerequisites for this course?

3. What are student needs as suggested by past experience for this course?

4. What level of information is necessary for success with this concept or idea under consideration?

5. What problems do students have in grasping this content?

6. Generally what do you want the students to be able to do as a result of your instruction on this idea or content?

7. List a minimum of three segments of your course which might be possible candidates for independent student mastery. Use your answers to questions 1-6 as a starting point for this selection. Also an extensive review of your own course outline, textbooks, and teaching activities would be in order at this time.

   WRITE THESE SEGMENTS HERE FOR LATER REFERENCE:

   1.

   2.

   3.

UNIT II, SECTION 2

PLANNING STAGE

When you have selected possible content areas to put into self-instruction packages, you have entered the second stage, the planning stage. The next step will be to narrow down your possible topics to one. You may wish to keep the other two in reserve in case you change your mind on the appropriateness of your original selection. The following work sheet is provided in order that you can proceed in a step-by-step fashion into the planning stage. Please answer all questions and activities as completely as possible.

WORK SHEET #2

I. From question #7, Work Sheet #1, select one of three topics as a candidate for self-instruction. Write that selection UNDER STATEMENT OF CONTENT SEGMENT, ON THE PACKAGE ORGANIZATION WORK SHEET (POW). (At the end of Unit II).

II. Write your purpose(s) for selecting the topic in #1. (You might use question #1, Work Sheet for this information. Write this purpose under PURPOSE #1 (POW).

III. Complete the following on this work sheet.
Your next step will be to assess the student needs in relationship to your purpose. Answer the following questions: (Use additional paper if needed).

1. What facts does the student need to know?

2. What terms and definitions does the student need to know?

3. What concept(s) does the student need to know?

4. What steps or skills must be performed?

5. What do you want the student to be able to do as a result of the lesson or activity? (Write a behavioral objective of your proposed content area.)

This last question is paramount in designing self-instruction materials or for that matter any instructional lesson, the area of writing behavioral objectives. Behavioral objectives are how you determine if you have arrived where you planned to go! Or in other words, they are statements of behavior which you expect the students to exhibit when they have completed your unit of instruction. Because of the wide differences of knowledge by teachers concerning behavioral objectives, we will ask you at this point to take the following pre-test. Your responses will determine your next activities. Before preceding into the next step in the planning stage, you will be expected to have a complete understanding of behavioral objectives.

PRE-TEST

BEHAVIORAL OBJECTIVES

Answer the following questions in the checklist using as a reference Work Sheet #2, Question III, Part 5, page 10.

CHECKLIST FOR WRITING A BEHAVIORAL OBJECTIVE

	YES	NO	?
1. Is your objective written in terms of student behavior?			
2. Is the learning outcome something that is measurable or observable? (i.e. identifies, describes, lists)			
3. Is the standard of performance indicated?			
4. Is your objective in the cognitive domain?			
5. Is your objective in the affective domain?			
6. Is your objective in the psychomotor domain?			
7. Does your objective indicate learning outcomes that are appropriate to the instructional area?			
8. Is your objective obtainable by the students involved?			
9. Is your objective in agreement with basic learning principles?			

After you have completed the checklist, check below to determine your next activities.

1. Yes - Proceed to #2.
   No or ? - Read carefully chapter 3, Instructional Design, Jerrold Kemp* noting the characteristics of good behavioral objectives.

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*Jerrold E. Kemp, Instructional Design, Fearon Publishers, Belmont, California, 1971.

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2. Yes - Proceed to #3.
   No or ? - Read carefully chapter 3, Instructional Design, Jerrold Kemp noting the characteristics of good behavioral objectives.

3. Yes - Proceed to #4.
   No or ? - Read carefully chapter 3, Instructional Design, Jerrold Kemp noting the characteristics of a good behavioral objective then proceed to #4.

4, 5, 6. If you answered any of these with a ?, read very carefully chapter 4, Stating Behavioral Objectives for Classroom Instruction, Norman E. Gronlund,* then proceed to #7.

If you answered No in all above, read chapter 4, Stating Behavioral Objectives for Classroom Instruction.

If you answered Yes in one or all of the above, but do not understand what is meant by cognitive, psychomotor, and affective domains also read above. Then proceed to #7 if you do understand.

7, 8, 9. If you answered No or ? on any of these, read carefully chapter 4, Stating Behavioral Objectives for Classroom Instruction, if you answered Yes to 7, 8, 9, proceed.

If you have answered YES to question 1, 2, 3, 4, 5, or 6, 7, 8, 9, you probably understand behavioral objectives and how to write them. Re-copy the answer from Work sheet 2, question III, part 5, below. Also write other behavioral objectives you will need for your presentation below making sure that you can answer YES to the questions on the check-list. Proceed to the post-test on behavioral objectives.

If you answered NO to some of the questions on the check list and have read and studied the noted material, re-write your behavioral objective in the space provided making sure you can answer YES to the

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*Norman E. Gronlund, Stating Behavioral Objectives For Classroom Instruction, The Macmillian Co., New York, 1970.

questions on the checklist. Then write additional behavioral objectives that you will need for your presentation (NOTE: One objective may be enough for any one presentation, depending on the complexity of the subject or presentation). Proceed to the post-test on behavioral objectives.

BEHAVIORAL OBJECTIVE #1

BEHAVIORAL OBJECTIVE #2

BEHAVIORAL OBJECTIVE #3

That was hard work! But it will be worth it! Because the presentations pre-testing will be dependent upon the quality of the behavioral objectives and your understanding of them.

POST-TEST

1. List the three essential characteristics of behavioral objectives.

   a.

   b.

   c.

2. Read the following behavioral objectives and a) Circle and identify the three characteristics in each objective. b) Determine what domain the objective belongs.

   1. Given a controversial issue, the student will identify the key points of contention.

   2. The student voluntarily designs experiments to demonstrate chemical changes and seeks opportunities to conduct such experiments.

POST-TEST ANSWERS

1. a. Written in learners terms.
   b. Measurable or observable action.
   c. Standards and conditions of achievements.

2. 1. Given a controversial issue, (a) the student (b) will identify the (c) key points of contention. Cognitive

   2. (a) The student (b) voluntarily designs (c) experiments to demonstrate chemical changes and (b) seeks opportunities to conduct such experiments. Affective

If you missed question 1 - Read chapter 3, Instructional Design and take the post-test again.
If you missed question 2 - Read chapter 3, Instructional Design, and chapter 4, Objectives for Classroom Instruction and take post-test again.
If you answer both questions correctly, continue to section 3.

UNIT II, SECTION 3

DESIGN OF THE PRESENTATION

Using your behavioral objective(s) as guides, in the following space write a detailed outline of content you wish to cover to teach the behavioral objective. If you have more than one objective, complete an outline for each objective you have stated. Also at this point write your behavioral objectives under BEHAVIORAL OBJECTIVES IN (POW).

(Use additional paper as needed.)

When you have completed the outline, you will have determined what you wanted the students to be able to do (behavioral objective) and you will have an outline of the content to meet that objective. You must now decide what method(s) for self-instruction you plan to use to meet your objectives. It would be well at this point to review the formats, and their advantages and disadvantages presented in Unit I. Using that information, the following checklist and work sheet, determine the mode of presentation.

CHECKLIST

Check the following in the appropriate blanks.

I. How has the content been presented before?

_____Lecture

_____Textbook

_____Workbook

_____Film

_____Slide-tape

_____Other

_____Combination of _____, _____.

II. Was it effective in your opinion?

_____Yes

_____No

III. What type of learning objective would you consider your behavioral objective? (If you have more than one behavioral objective, do the following for each one.)

_____Learning factual information.

_____Learning visual identifications.

_____Learning principles, concepts and rules.

_____Learning procedures.

_____Performing skilled perceptual motor acts.

_____Developing attitudes, opinions and motivations.

Using the chart below, circle best relationship of the type of behavioral objective to the type of media:

\+ Good relationship

\- Fair relationship

0 Poor relationship

	Still pictures	Television	Audio Tape	Programed Instruction	Printed material (textbooks, etc.)
Learning factual information	-	-	-	-	-
Learning visual identification	+	-	0	-	0
Learning principles, concepts	-	+	0	-	-
Learning procedures	-	-	-	+	-
Performing skilled perceptual motor acts	0	+	0	0	0
Developing attitudes, opinions and motivations	0	-	-	-	-

IV. Review the advantages and disadvantages of various media formats in Unit I. Check the following possibilities in relationship with the advantages - disadvantages and what you circled in III (above).

_____Still picture

_____Audio tape

_____Television

_____Programed instruction

_____Printed material (textbooks, etc.)

_____Other

*William H. Allen, "Media Stimulus and Types of Learning," Audiovisual Instruction, January, 1967, pages 27-31.

The one(s) checked should be considered as possibilities for self-instruction. Place this information under RESOURCE, MEDIA IN (POW) for the appropriate behavioral objective.

V. In addition, you might want to use additional resources in your presentation. Check below material you have tried before, and know the quality of. Check the appropriate spaces below.

_____Slides

_____Films

_____Posters

_____Handouts

_____Still pictures

_____Models

_____Displays

_____Other_____

NOTE: After each one checked, name or give source of material.

VI. Check the approximate amount of time to be necessary for the presentation. (NOTE: It is good practice to have a separate segment for each behavioral objective, also 20 minutes should be considered as the maximum time per segment. If you have more than one behavioral objective, make a segment for each behavioral objective.)

_____5 minutes

_____10 minutes

_____15 minutes

_____20 minutes

_____30 minutes

_____40 minutes

_____50 minutes

_____60 minutes

NOTE: If more than 20 minutes, you may want to break the segments down into shorter time periods.

VII. For each behavioral objective, list below the possible activities you would suggest for students to do to achieve your behavioral objective. Make sure that the activities can be self-contained, self-paced and done independently.

1.

2.

3.

4.

Transfer this information to LEARNING ACTIVITIES for the appropriate behavioral objective in (POW).

VIII. Review the outline you made on each segment. Check the following to determine what type of presentation sequence for each segment you will attempt.

_____Simple to complex

_____Fact to generalization

_____Practical to theoretical

_____Theoretical to practical

_____Meaningful to unknown

_____Past to present

_____Present to future

_____Other_____

At this point, check off the following activities in order.

Review your behavioral objectives.

Do you want to make an addition? YES_____ NO_____
Do you want to delete any? YES_____ NO_____
If YES to either above, do that now.

Check your outline(s).

Do you want to make any revisions? YES_____NO_____
If YES, do that now.

Check VII (sequencing).

Do you want to make any changes? YES_____NO_____
If YES, do so now.

At this point, write a draft of the content (narrative) for each segment. When you have finished this, you are ready to think in terms of production of the content into a self-instruction package. This will be explained in detail in Unit II, Section 4. (NOTE: You may revise this draft several times before you decide on its final form. In addition, production characteristics of the media chosen may dictate changes.)

UNIT II, SECTION 4, IS IN TWO PARTS, A AND B

Part A

Part A is a slide-tape presentation, the script follows in this booklet. It is recommended that the learner view the slide-tape presentation. If he wishes, he can follow along with the script. Numbers are provided in the script to show the location of the slides.

Part B

Part B is a short television video-cassette. It is recommended that the learner view the video-cassette and then read the accompanying material in this booklet. A bibliography of related materials is found at the end of this section.

The Director of Learning Resources can provide you with a list of sources and catalogs concerning commercially produced instructional materials which you might wish to consider to integrate into your package.

UNIT II, SECTION 4

PART A - SCRIPT

Slide-Tape Production

(1) The primary purpose of this package will be to get your self-instructional unit ready for production into slides and audio-tape. (2) No doubt you have reviewed the advantages and disadvantages of slides in Unit I and you have used the checklist earlier in this unit to help you

make the decision to use slides as a part of your self-instructional package; however, let's look at the advantages for using slides one more time: (3) Slides can hold the viewer's attention. (4) They help get the message across quickly and (5) Give viewers a common background experience. (6) Slides help in clarifying and explaining concepts. (7) And finally, slides are easy to use by a student and are easy to store and maintain. (8) Now back to the job at hand. You have completed at this point the most difficult part of devising a self-instruction unit, the initial planning. The step of getting it ready for production is vital, but you have a good basis to start from. (9) For each behavioral objective, you should have one sub-segment or self-instruction unit. (10) You also have a draft of your script. (11) The best way to plan and develop slides for a presentation is to use story board cards. (12) A story board, as you can see, has a place for the narration (Take this from your draft script.), (13) a place to sketch the picture to match or amplify your script, (14) a place for a number, and production notes. You can easily make your own story board cards out of 3 X 5 blank cards. A note about sources of your pictures: (15) They can be taken of real things, of (16) drawings and graphics made specifically for the purpose (the ones used in this presentation are of that type) and from any non-copyrighted pictures or materials. (17) Remember pictures and graphic materials are owned by the photographer and artist just as the written word is. (18) Using your draft script, write the narration you want on the story board card, number it, and then sketch the picture you want to show in the box. (19) Pictures are to clarify, illustrate,

and amplify your narration. (20) If you do not want to use an illustration for any part of your narration, leave it blank. There are times where you may want the student to concentrate on what you are saying; at these points cut in blank slides. (21) Because you have chosen the visual medium, use as many slides as possible to illustrate your presentation! (22) After you have gone through your entire script and made story board cards of the entire script, lay them out on a big table in order and review your entire presentation making changes where necessary. For each picture sketched, you should ask the following questions:

(23) 1. Will the slide help achieve the behavioral objective of the lesson?

(24) 2. Is there continuity between the slide and the previous one?

(25) 3. Does the slide concentrate on one idea?

(26) 4. Is there any unnecessary information in the slide?

(27) 5. Is the information presented in the most effective manner?

(28) 6. Are the titles and printed matter in the pictures legible?

(29) 7. Will the commentary distract from the picture or vice versa?

(30) Other notes you may want to include on story board cards concern such things as whether the slide will be in black and white or in color or what type of film to use as the format. (31) These details will be discussed in a moment, however we recommend that you talk these

matters over with your AV Director. He is the expert on production of materials and will be able to give much help. You can help him however by telling him exactly what you want on each of your story board cards.

(32) Color should be your choice: most people like color; color adds realism and accuracy to your slide. Development cost of black and white film is no longer a significant saving over that of color film. Of course, depending on the subject, black and white film may be a necessity. (33) You should now know what type of camera will be used for making your slides, because this factor determines the size format for any of your graphics. All drawings either done by you or the AV Director should be on a 10 X 12 inch poster board which can be easily filed in a filing cabinet. The "working area" within this poster board will differ in size according to the type of camera used. For example:

(34) A visual for a camera designed to use 135 mm film would look like this:

(35) A visual for a camera using 126-size film cartridge would look like this:

(36) A visual for a camera using 127-size film would look like this:

(37) There are two other concerns that you may want to note on your story board cards if the slide is not a graphic or a drawing: 1) camera distance, and 2) camera angle.

Camera distance can provide variety and direct attention to detail. Basically there are four camera distances.

(38) 1. Establishing Shot (long). This picture includes all the elements in a situation. The viewer can see the environment and can see the parts making up the whole.

(39) 2. Medium Shot. Attention is centered on the main elements in the scene.

(40) 3. Close-up Shot. The camera comes closer so that one element can dominate the scene.

(41) 4. Extreme Close-up Shot. Attention is centered on small but important details.

(42) Camera angles are also important not only in giving the most information to the viewer, but also in presenting the information from predetermined points of view. (43) The objective camera photographs the action as seen from an unseen observer. This viewpoint would be similar to that which one would see in looking at a demonstration.

(44) The subjective camera photographs the action so that the viewer seems to actually be doing the action himself. This is usually accomplished by shooting over the performer's shoulders. This angle is especially good for how-to-do-it scenes.

(45) The color, camera distance, and angle are information necessary to produce good slides no matter who will be the photographer you, or the AV Director.

(46) You may wish to make an audio-tape to go along with your slides. Thus you must synchronize the sound and pictures, in order that the pictures match the narration. There are several ways to synchronize sound:

(47) 1. Use audible cues on the tape; for example, a tap of a pencil, ringing of a bell, are the least distracting and are ones which will notify the user to advance the slide. This presentation uses the concept of saying "slide #1, slide #2" at the appropriate time. This procedure helps to make sure the correct slide is in position.

(48) 2. Mark the script with cues so that the user can change the slide when it comes time for reading the script.

(49) 3. Use an inaudible automatic signal (you need special equipment) which automatically changes the slides at the appropriate time in the presentation. It is not recommended for self-instruction because it is hard to get synchronization if you have to go back and review earlier parts of the presentation.

(50) 4. Use a combination sound and cued script to go through the presentation.

NOTE: No matter which you choose, be sure and number your slides so that they can be seen on the screen. This will help in getting the correct slide at the appropriate time.

The following is a review of the steps to take when getting ready to produce a slide-tape presentation:

(51) 1. Use master script to put narration on story board cards, number cards.

2. Sketch appropriate pictures for each story board card.

3. Write other details on cards, camera distance, color angle format information, etc.

4. Give the cards and information to the AV Director and discuss the presentation with him.

5. Determine how you want to synchronize sound and pictures.

6. Record (or have recorded) sound in a room or studio suited for that purpose. Again see your AV Director.

7. Proceed to Unit II, Section 5.

UNIT II, SECTION 4, PART B

SUPPLEMENTARY READING - TELEVISION

Television has been used effectively in many areas of teaching. Television can also be used effectively in self-instructional programs. The introduction of the new video-cassette units have made student playback of prerecorded materials extremely easy. In addition these pretaped video tape cassettes are easy to rewind and play back over and over. This, of course, fits into the self-pacing concept that is vital in self-instructional programs.

Video taping is an ideal way of showing material which must be presented in a step by step method. This step by step method has been found to be of great value in such areas as psychomotor skills, where the student must learn how to manipulate tools. The camera can zoom in for close-up pictures which magnifies the object or techniques being shown.

If a presentation has many elements or many types of media involved, television might be appropriate. For example, a self-instructional

program may have the need for a set of slides, a filmstrip, a film and overhead transparencies. This of course would involve four pieces of equipment. However, if all the separate segments were video-taped, all the advantages of each separate medium would be available using only one system of equipment, the video-cassette recorder and television monitor.

Television (video-taping) can do many other things which might be beneficial for self-instructional programs. Some of these include:

1. Observation of hard to see actions.
2. Magnification of extremely small objects.
3. Reduction of extremely large objects for more objective view.
4. Direct teaching or information which when presented will always be the same.
5. Dramatize aspects of the lesson.
6. Direct attention.
7. Present ideas visually.

Television is not a one person operation. An elaborate television studio involves many people, even in a small, less sophisticated production center like which you will be using. Also, the more elaborate the presentation the more time, personnel, and expense will be involved. You will probably find that even in a very short single concept presentation, that you will spend several hours of work for each minute of time you have taped.

No matter how sophisticated or simple your presentation is to be, you will need a script. Using your draft script as a start, one method of scripting a video-tape is to divide a sheet of paper into two parts. On

the left side write the audio portion of your project. Then go back on the right side and at the appropriate place, describe the visual to be used, as well as the type of shot, length of time, etc. Once again, the more involved the project the more complicated the script and directions. Television is a visual medium and therefore you should use visuals! However, there are times in which it might be necessary to appear on camera yourself. Some of the following suggestions may be of help to you if this is necessary:

1. Speak clearly in a conversational tone as you would to two or three students.

2. Use appropriate visuals. It is important that the viewer see what you are talking about.

3. When showing items for close-ups, hold them steady. Give the viewer enough time to view and understand them.

4. If you use a pointer on a diagram, chart, model, go slowly and always go in the same direction.

5. You will have to move in a restricted area, rehearse and stay in the area.

6. Don't let your hands, arms, or other obstructions get in the way of your close-up shots.

7. Avoid whites and bold prints. Wear comfortable clothes, pastels, tans or blues are recommended. Also avoid bright jewelry.

Television can use many different types of visuals related to your topic. This variety of sources of materials is a strong advantage to using television.

Pictures, charts, graphs from magazines and books can be copied via photographs or taped directly from the original source. Films, film-strips and slides can be taped directly from a screen or via film-chain.

Any slides taken outdoors in the field make excellent television visuals. Models, line specimens, cutaway models can all be excellently taped without modification.

Your own ideas which are not pre-prepared materials can be sketched and re-drawn graphically for use on television. The following considerations are in order if any graphics are to be drawn.

1. Keep the materials simple, bold with limited detail. Use suitable plain lettering.

2. Graphics for television must fit a definite format. Television format is 3 units high and 4 units wide. When planning any graphics, make sure to use this 3/4 format. Provide for a loss of 1/6 of the marginal area on each side and keep the important parts of the visual within the middle 2/3 portion. The area where the visual should be is called the essential area. The 1/6 area is called the transmission area.

3. For points of information, use an outline form. Do not duplicate what is being said, only summarize. Limit outlines to 4 or 5 lines with no more than 3 to 4 words per line. Lettering should be no less than 1/25 the height of the essential area.

4. Avoid extreme contrast i.e. black lettering on white poster board or shiny items or objects that reflect light. The graphics should be done on tan or light gray or pastel backgrounds for best results. If color is to be used, check backgrounds with cameras to be used. Each camera may pick up the color in a different manner.

Various types of display devices may be used for television. The following are examples of commonly used methods:

Easels

Flannel boards

Chalkboards

Magnetic boards

Television is a tremendous teaching resource, however, to be used effectively it will require great amounts of time, effort, and revision. Before you start on a proposed television topic, consult your AV Director. It might be well to start small with a short single concept presentation. These are the best anyway for self-instruction purposes. Make sure that your topic is suitable for television in terms of your behavioral objectives, ideas to be communicated, the most effective visual medium and in terms of time, expense and effort needed for preparation.

UNIT II, SECTION 5

EVALUATION IN THE PILOT STAGE

PRE-TEST, POST-TEST, AND STUDENT EVALUATION FORM

In this section the learner will design a pre-test and a post-test based upon the behavioral objectives developed during the planning stage. Then, he will prepare a student evaluation form. The post-test and student evaluation form will be utilized in Unit III, individualization of packages. Obviously the preliminary package must be used by students before Unit III can be initiated.

DEFINITION OF TERMS

Pre-Test. A means of measuring a student's knowledge of prerequisite and package content to determine if there is a need to work the package.

Post-Test. A means of measuring a student's comprehension of the content in a package and determines if and in what sections there is a need for reworking parts of the package, or entry into alternative paths when available (Unit III).

Student Evaluation Form. A means of measuring the package materials, activities and test items by student input as a package user.

A pre-test not only investigates a student's potential for success in a package (prerequisite knowledge) but information on the package subject as well. The pre-test value is its accuracy in measuring this knowledge. If adequate knowledge is demonstrated on the pre-test, a student can go directly into another package, avoiding unnecessary boredom and repetition. Thus the student is allowed to excel at his own pace.

When a student fails to successfully complete a pre-test exercise, he completes the package and takes a post-test. The post-test provides important feedback to the student and instructor. If performance reveals inadequate mastery, the post-test tells the student the areas that need to be reviewed.

Both the pre-test and post-test should be based on the behavioral objectives. Many times the two tests are exactly the same. However, an additional section of the pre-test can be devoted to prerequisite testing, a highly recommended procedure. While planning, derive behavioral objectives by thinking of the most appropriate way to measure each objective. Consider ways most beneficial to you and your student. When evaluating a psychomotor objective, the pre-test may involve skill demonstration. Affective objectives can be expressed, paper and pencil style or observed by the instructor in class or interview. Cognitive objectives are most

often measured with direct questions. Remember: tricky questions will not accurately measure student potential or abilities. Each item should accurately test the learning which is your goal.

At this point you will construct a pre-test on the content of your preliminary package. Use columns for pre-test items on the POW to place each item in relation to the prerequisite or behavioral objective being measured.

After completing your pre-test, go through the checklist for the pre-test.

CHECKLIST FOR PRE-TEST

Check the appropriate answer:

TRUE	FALSE	
		1. A pre-test is designed to precede entry to the package materials.
		2. A section of pre-test questions should measure pre-requisite knowledge.
		3. A pre-test identifies the student's competency in the subject area of the package.
		4. A section of pre-test questions should measure existing student mastery of the new knowledge that will be presented in the package.
		5. Behavioral objectives are a source for pre-test questions.
		6. One importance of a pre-test is to allow the students to see what areas he needs additional information in.
		7. A pre-test can be used to determine if there is any further need for working the package.
		8. The pre-test serves as a prescription for learning (feedback with direction is supplied to the student).

If you cannot answer true to checklist statements, re-design the pre-test as necessary until all answers on checklist are true of your pre-test.

At this point you will construct a post-test on the content of your preliminary package. Use the column for POST-TEST ITEMS to place them in relationship to your behavioral objectives.

At this time you may also note self-test items which might be included in the package to provide the student with feedback as he progresses through the activities in mastering the behavioral objective in the POW column provided for that purpose. Self-test items will be directed toward mastery of the behavioral objective as demonstrated in the post-test item.

CHECKLIST FOR POST-TEST

Check the appropriate answer:

TRUE	FALSE	
		1. The post-test measures performance of behavioral objectives.
		2. Each post-test item is identified with a specific behavioral objective.
		3. Each behavioral objective is measured by a post-test item.
		4. The post-test items are clearly stated.
		5. Post-test items provide either pencil/paper or observed demonstration of performance.
		6. Post-test items are suitable for item analysis, i.e.* (Feedback on item difficulty and accuracy of measurement)

*Item analysis will be explained in Unit III.

After completing your post-test, go through the checklist for the post-test. If you cannot answer true to checklist statements, re-design the post-test as necessary until all answers on the checklist are true of your post-test.

At this point, examine the Model Student Evaluation Forms (following pages) which should elicit information for future revision for the package (Unit III). Re-design as necessary to fit your package requirements.

It is suggested that you add a direction at the bottom of the form to turn into the instructor or place in a file designated for that purpose under the title or number of the appropriate package.

EVALUATION OF THE LEARNING PACKAGE

Please make written comments on the total learning package. Use the brief checklist to evaluate the various aspects of the package.

Directions: Check the appropriate level (5 = high and 1 = low) relative to the various statements or questions.

Statement - Questions	5	4	3	2	1
1. What is your overall rating of this learning package?	___	___	___	___	___
2. How well were the objectives stated?	___	___	___	___	___
3. How well did the instructional sequence meet the objectives?	___	___	___	___	___
4. How well did you achieve the objectives as measured by the self-evaluation?	___	___	___	___	___
5. How clear were the instructions?	___	___	___	___	___
6. How effective would this package be in training teachers in the stated process skills?	___	___	___	___	___
7. How well were the evaluation items written?	___	___	___	___	___
8. What was your level of interest in the instruction as you went through the program?	___	___	___	___	___

Directions: Part II - Please write comments on the learning package. Include discussion on overall rating and why so rated; objectives; instructional activities; evaluation techniques.

MODEL STUDENT EVALUATION FORM

1. List the package activities you enjoyed most. Briefly explain why.

2. List the package activities you enjoyed least. Briefly explain why.

3. List package concepts not clearly presented.

4. List post-test item numbers not clearly presented.

5. If you could eliminate any activity or material from this package, what would it be?

6. Could this information have been better understood if presented in a different form? If YES, explain other form.

Re-examine the POW. Your package should be ready for assembly when production of necessary materials (Unit II, Section 4) is completed.

Before evaluation, revision, or individualization, re-design and further refinement can take place. This preliminary package should be put into student use.

PACKAGE ORGANIZATION WORK SHEET

PRE-TEST STUDENTS PREREQUISITE KNOWLEDGE AND SKILLS

PRE-TEST BEHAVIORAL OBJECTIVES (AT LEAST ONE FOR EACH SEGMENT) LEARNING ACTIVITIES

PACKAGE ORGANIZATION WORK SHEET

COURSE: INSTRUCTOR:

STATEMENT OF CONTENT SEGMENT:

PURPOSE:

RESOURCES MEDIA	POTENTIAL SELF TEST TO CLARIFY DIFFICULT CONCEPTS	POST-TEST

new river community college

PREPARING SELF INSTRUCTIONAL PROGRAMS : A SELF INSTRUCTION APPROACH

UNIT 3

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U N I T I I I

REVISING AND INDIVIDUALIZING A SELF-INSTRUCTION PACKAGE

NEW RIVER COMMUNITY COLLEGE

JUNE, 1973

Prepared under contract by
College of Education VPI & SU
David M. Moore, Project Director
Barbara Melosh
Ellen Altman

U N I T I I I

GENERAL CONTENT DESCRIPTION

A student involvement activity in revising and individualizing a self-instructional unit.

PREREQUISITE

A self-instructional unit to be revised and/or individualized.

TABLE OF CONTENTS

I. Instructions for Using Unit III

II. Learning Objectives

III. Introduction

IV. Unit III, Section 1 - Assessment

V. Unit III, Section 2 - Revision Stage

VI. Unit III, Section 3 - Development Stage

LEARNING OBJECTIVES

1. The learner will assess and revise a previously prepared self-instructional package, constructing additional instructional loops as necessary.

2. The learner will list three modes of assessment of existing packages in use.

3. The learner will define the following terms as defined in this package.

Feedback (p. 6)

Loop (p. 6)

Acceleration Loop (p. 6)

Remedial Loop (p. 6)

Feedback Loop (p. 7)

INTRODUCTION

Individualization of a preliminary package consists of adding alternative paths to the original or basic path. These alternatives are called loops if, at key decision points in the package sequence, students switch into a parallel path, or into an additional path, returning to the original package at a later point in the case of parallel paths, or at the same point in the case of additional paths. Packages may also be individualized by the provision of alternative packages with entry determined by the pre-test. Obviously, the instructor will make this decision based upon the purpose, size, and content of the preliminary package. For very small packages the alternative package system would

probably be the best individualization solution, but in longer packages students may require different types of individualization at key points. The following assessment procedures can be used for either solution.

UNIT III, SECTION 1

ASSESSMENT

Three modes of assessment are suggested here:

1. To examine post-test scores
2. To examine student evaluation sheets
3. To observe packages in use.

1. Examine post-test scores item by item to determine percentage of student success. Use a copy of the post-test itself as a preliminary work sheet. If you are storing post-tests in individual files, you might provide a master record on which student or assistant checks correct items as each test comes in (as suggested in part IV).

SAMPLE

POST-TEST UNIT #
NO. OF STUDENTS COMPLETING POST-TEST: 𝍸 𝍸 𝍸 𝍸
ITEMS CORRECT:
1. 𝍸 𝍸 𝍸 𝍸
2. 𝍸 𝍸 𝍸
3. 𝍸
4. 𝍸 𝍸 𝍸
5. 𝍸 𝍸 𝍸 𝍸

Mark high success items as potential for enrichment or acceleration loops (A) as most students are succeeding with this item. Remember, however, that this is your goal and that acceleration may not be required!

Mark medium success items as potential for remedial loops (R) or for feedback loops (F). Many students are succeeding as the package stands, but many students need additional input. Perhaps additional feedback may be all that is required.

Mark low items as requiring complete re-design (RD). Too many students are having difficulty achieving the behavioral objective. During the re-design two paths may be planned, one regular path plus an alternative (remedial, R) loop. NOTE: Before you start a complete re-design of materials, check your behavioral objectives and your pre- and post-test. Your tests may be at fault not your package!

2. Examine student evaluation forms. (These should have been collected in a separate file under the number or name of the package.) Wherever possible, identify student response with specific items on your post-test copy work sheet. For other comments (on content activities, resources etc.) make a list.

3. (optional) Plan observations of package in use by students. If the learning situation is supplemented by tutorial help, tutors may be provided with forms to note areas in which they are most frequently called upon for help.

UNIT III, SECTION 2

REVISION STAGE

Before proceding with the insertion of feedback, acceleration and remedial loops; check the following.

Content

Make basic content revisions and place in the appropriate sequence.

Behavioral Objectives

Rewrite or add (or drop) behavioral objectives as necessary and place the revised objectives in the sequence. Make notes on pre-test and post-test items affected by the above changes.

Re-Design

Make obvious adjustments in learning activities and accompanying resources/media which are to be retained in the basic package. (Use the list gleaned from the student observation forms and your observation.) Add to or delete items from the basic package.

Mark and number locations in the sequence for the addition of feedback, acceleration and remedial loops.

DEFINITION OF TERMS

Loop. An additional path designed for individual students use in self-instruction which assists the student in mastery of the behavioral objective.

Feedback. Informs student (and teacher) of progress. Assists in clarification of specific concepts ("teacher tests"). Reinforces understanding of essential points. Signals difficulties both during (self-tests) and at completion (post-tests) of units of work.

Acceleration Loop. Increases self-pacing options in the package. Some acceleration loops condense steps so that capable students may complete basic work sooner. Some acceleration loops provide enrichment. The student is allowed to pursue concepts in more depth and/or to pursue

additional related concepts. Because such work is supplementary, the loop may encourage creative or intensive work along lines of a student's personal interests.

Remedial Loop. Breaks down material into smaller steps often including prerequisite information and additional practice.

UNIT III, SECTION 3

DEVELOPMENT STAGE

To individualize a learning package means:

1. To increase the available self-instructional devices which students may utilize to master the behavioral objective (feedback loop).

2. To increase the self-pacing and learning style options which the student may utilize to master the behavioral objective (acceleration and remedial loops).

Design Feedback Loops

Analyze content for difficult concepts which may require clarification. Research indicates that a series of multiple choice items which allow the student to make discriminations are effective. Each item should be followed by a correction of response plus an explanation. The student continues through the series until he feels he understands the concept at which point he returns to the package. The student who continues to have difficulty throughout the feedback loop requires a remedial loop.

Design Acceleration and Remedial Loops

A work sheet follows. When each loop has been worked out in the columns under II and III, determine the entry and exit items (columns

I and IV) which will determine which students should enter the loop, and where they should return into the basic package.

Insert Loops into Package

a) Finalize pre-and post-tests.

b) Assemble package.

I			II	
For Acceleration or Remedial Key Item to Switch	Number Location in Package	Loop Type Acceleration or Remedial	New or Revised Segments in Sequence	Behavioral Objectives For Segments in the Loop

III			IV
New or Revised Instructional Activities	New or Rearranged Resources/Media	Self-Test Item	For Acceleration or Remedial - Key Item to Return to Package

new river community college

PREPARING SELF INSTRUCTIONAL PROGRAMS : A SELF INSTRUCTION APPROACH

UNIT 4

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U N I T I V

UPDATING, REVISION, AND IMPLEMENTATION

NEW RIVER COMMUNITY COLLEGE

JUNE, 1973

Prepared under contract by
College of Education, VPI & SU
David M. Moore, Project Director
Barbara Melosh
Ellen Altman

U N I T I V

GENERAL CONTENT DESCRIPTION

Follow-up Activities

A Guide to Updating and Revision Assessment including a brief Review of Relevant Operations (developed in Unit II) and Suggestions for Implementation.

PREREQUISITE

None.

TABLE OF CONTENTS

I. Instructions for Using Unit IV

II. Learning Objectives

III. Pre-Test with Answers

IV. Unit IV, Section 1 - Package Evaluation

V. Unit IV, Section 2 - Package Updating and Refinements

VI. Unit IV, Section 3 - Major Package Revision

VII. Unit IV, Section 4 - Script for Slide/Tape Package Implementation

VIII. Post-Test

INSTRUCTIONS FOR USING UNIT IV

Upon completion of the activities requested, take the post-test and follow the instructions on the post-test answer sheet.

LEARNING OBJECTIVES

1. The learner will list the five post-test requirements which facilitate simple item analysis evaluation.

2. The learner will identify the additional value to be gained from student input in a student evaluation form.

3. The learner will identify characteristics of two types of validation procedure.

4. The learner will identify the source areas which must be considered in preparation for updating and refining packages.

5. The learner will present a procedure for using the information gleaned from an assessment instrument.

6. The learner will affirm the presence within this program of unit-contained guidance for making major package revisions.

7. The learner will list prime requirements for the utilization of packages and the provision of appropriate practice, including: equipment, space, and time considerations.

8. The learner will list a minimum of three alternative utilizations of self-instructional packages for his program.

9. The learner will distinguish between the value of individualized use of self-instructional packages and group utilization of instructional packages.

10. The learner will identify two purposes for packages which are particularly suitable for group utilization.

PRE-TEST

1. List the five post-test requirements which facilitate simple item analysis evaluation.

   1.

   2.

   3.

   4.

   5.

2. What additional input to effective evaluation of a package is to be gained from the student evaluation form?

3. Which of the following procedures validates post-test items? (Mark PT)
   Which of the following procedures validates package effectiveness? (Mark PE)

   _____1. Comparison of instructional designs

   _____2. Experimental design

   _____3. Simple item analysis

   _____4. Trained researcher

   _____5. Analysis of content

   _____6. Direct relationship to behavioral objective

   _____7. Control groups of students

   _____8. Random assignment to treatments

4. List five areas which serve as sources of material for updating and refining packages.

   1.

   2.

   3.

   4.

   5.

5. Write the procedure you would follow for utilization of new input (from an assessment instrument) in the package revision process.

6. Do units in this New River Community College Program for Self-Instruction provide guidance for major package revision? (circle)

   YES NO

7. List the prime requirements for establishing appropriate practice conditions.

8. List several alternative utilizations for self-instructional packages in your program.

9. Put an S by values <u>primarily</u> attributed to self-instruction.
   Put a G by values <u>primarily</u> attributed to group instruction.

   _____1. Students stimulate other students.

   _____2. Students work cooperatively.

   _____3. Students work alone.

   _____4. Student work includes discussion.

   _____5. Student work is self-paced.

   _____6. Students work in areas of their greatest need.

10. From the following list of five purposes for packaging instructional materials, select the two which are particularly suitable for group utilization.

_____1. Provide opportunity for student research in areas of special interest.

_____2. Provide structure for interchange of ideas.

_____3. Provide practice in areas of special need.

_____4. Provide an integrated delivery system of several diverse resources.

_____5. Provide instruction at student's own pace.

PRE-TEST ANSWERS

1. Answers in Section 1, Steps for Evaluation.

2. Answers in Section 1, Student Evaluation Forms.

3. 1. PE, 2. PE, 3. PT, 4. PE, 5. PT, 6. PT, 7. PE, 8. PE.

   If you missed any of the above, read Section 1, Steps for Evaluation and Validation.

4. Your answers should suggest examination of developments in the following areas:

   1. Content or subject
   2. Learning research discoveries
   3. School environment changes
   4. Educational technology developments
   5. New resources/materials

   For an assessment instrument which provides questions to ask in each area, see Section 2, Assessment Instrument.

5. Compare your procedure with the suggested procedure in Section 2, Procedure: Utilization of the Assessment Instrument.

6. YES. Specific Unit locations are provided in Section 3.

7. Your answer should include considerations of equipment availability, suitable space allocations, and scheduled time allocations.

   Suggestions for possible space locations will be provided in Section 4. (slide-tape)

8. When viewing slide-tape (D) check your list against the list provided, noting additional utilizations which might be of value in your program. (You should have at least three.)

9. 1. G, 2. G, 3. S, 4. G, 5. S, 6. S.

10. 2 and 4

    Discussion on slide-tape (D)

INTRODUCTION

Once a package exists and is in use by students in an instructional program, the question becomes one of how to maximize its effective utilization and how to maintain its effectiveness in a changing environment.

The several aspects which characterize follow-up efforts can be categorized as follows:

1. Package evaluation
2. Package updating and refinement
3. Major package revision
4. Package implementation.

UNIT IV, SECTION 1

PACKAGE EVALUATION

Because the packages designed according to the New River Community College Program for Implementation of Self-Instruction are performance based, the main point of the package evaluation outlined here rests entirely upon the results which are being achieved by students using self-instructional packages developed in Units I and II of this program.

Instructors engaged in package revision are referred to Unit III, Revision and Individualization of Self-Instructional Packages, which details evaluation steps and provides a work sheet for revision of packages. For convenience, however, the simple steps of package performance evaluation are recapitulated here and are followed by a short explication of the nature and requirements for validation of package evaluations.

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It should be noted that validation techniques require technical training in research, and that it is beyond the scope of this unit to provide the complex evaluation which such techniques demand. However, the following booklet is provided for your further investigation into this topic.*

Steps for Evaluation

Post-test requirements for facilitation of simple item analysis.

1. Each post-test item must clearly test the attainment of a behavioral objective (content validity).

2. Each major behavioral objective must be represented by an accurately prepared post-test item.

3. Performance on each post-test item must be available for a cummulative evaluation (to be collected from the total number of post-tests administered to students on an item-by-item data sheet.

4. Data must be evaluated on the basis of student success in performing each item.

5. Decisions for revision are made on the basis of student performance (See Unit III).

Student Evaluation Forms

1. Student input must be utilized in the evaluation stage because it provides package content evaluation.

2. Student input aids decisions for revision of activities and resources to insure better mastery of behavioral objectives.

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*Donald T. Campbell and Julian C. Stanley, Experimental and Quasi-Experimental Designs for Research, Rand McNally & Co., Chicago, 1972.

Validation

Aside from an analysis of content validity, i.e., the direct relationship between behavioral objective and post-test item, package validity can only be established by measurement. Measurement of results can be accomplished by the simple item analysis already discussed.

Further analysis (success of the package as compared to success of other packages, or as compared to other instructional designs) beyond use of student and teacher observation, can be accomplished by the use of an experimental design. Experimental design is a complex process which involves group comparisons including random selection of group members, control groups, etc. Campbell and Stanley's booklet which presents an array of such designs with an analysis of each has been included in this self-instructional package. A quick examination of that book will clearly indicate the need for trained researchers if useful results are to be obtained.*

UNIT IV, SECTION 2

PACKAGE UPDATING AND REFINEMENT

Before proceding with any major revisions of a package, good sense demands that purposes, content, and outcomes which determine the value of the package to the instructional program be considered first.

In order to insure that the following considerations are flexible enough to fit any package for which revision is contemplated, (not just

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*Donald T. Campbell and Julian C. Stanley, Experimental and Quasi-Experimental Designs for Research, Rand McNally & Co., Chicago, 1972.

the packages designed in this program) the main decisions which are indicated will be posed as questions. These questions (which follow) provide the instructor with an evaluation device adaptable to a wide range of package styles.

Continuing refinement of packages in use requires periodic assessment of curriculum and course content and of student needs in the current instructional program. Once an assessment (using the following questions) is completed, the instructor will decide whether package addition, a major revision, or the design of a new package is the best instructional solution.

Assessment Instrument

1. Content Area:

a. Which old or new aspects of the course directly related to the area covered in this package are not yet adequately covered in the package? Should they be included in this package?

b. What do new developments in the subject area indicate in regard to the content covered in this package?

c. What do new developments in the subject area indicate in regard to the activities (processes, procedures) incorporated in this package?

2. Learning Research Area:

a. What implications do current learning theories have for the instructional strategies incorporated in this package?

b. How might the package be adapted to incorporate new learning approaches?

3. School Environment Area:

a. What new facilities have been provided in the school since this package was designed?

b. Which of these facilities (rooms, studios, work spaces, tutorial help, transportation) can be profitably utilized by students using this package?

c. What new programs or new courses have been added or are in development which have implications for future use of this package?

d. What changes have occurred in student clientele (abilities, interests, needs) which should affect utilization of the package?

4. Educational Technology Area:

a. What new formats or technological delivery systems have become available to the school since this package was designed which can be utilized to improve the effectiveness of the package?

b. What new systems or approaches have been suggested which have implications for the rearrangement of activities in this package?

5. New Materials Area:

a. What new texts or supplementary references are available or can be ordered to be included in or used as supplements to this package?

b. What new films, what new slides, what new video-tapes, etc., have become available which improve upon the resources used in this package?

Procedure: Utilization of the Assessment Instrument

1. Quickly write up a brief summary of your findings recording your immediate ideas and preliminary recommendations for updating and refining the package.

2. Survey the package in detail, making notes on possible revisions. Examine the notes to establish priorities.

3. Examine the existing package to see if high priority items can be inserted for immediate availability to students now using the package.

4. Decide whether the package should be (a) revised or (b) replaced with a new package.

   a. Read Section 3, following.

   b. Use Unit II as a guide to the design of the new package.

UNIT IV, SECTION 3

MAJOR PACKAGE REVISION

The instructor engaged in a major revision of a package in use is referred to Unit III of the New River Community College Program for Implementation of Self-Instruction.

If production of new materials in slide-tape or TV formats are contemplated, the instructor is referred to Unit II, Section IV, Production of Package Materials. For decisions about alternative materials, the instructor is referred to Unit I, Section VII and Unit II, Section III.

The aforementioned Sections may also be of use in the revisions of packages developed outside of this program.

UNIT IV, SECTION 4

PACKAGE IMPLEMENTATION

(1) Utilization of instructional packages for individuals, or for small groups, requires the provision of equipment, space, and time for appropriate practice. (2) The first step is to find out what equipment and space are available, when and where? Suitable space may be found in:

(3) 1. Libraries

(4) 2. Audio-visual centers

3. Curriculum centers

(5) 4. Classrooms

(6) 5. Laboratories

Electronic labs

(7) Machine shops

Clothing and food labs

(8) Auto shops

(9) That all of these areas may be over scheduled, or overcrowded is a problem which may hamper the program. Perhaps the student may take packages to outside locations; however, it can be easily seen that to be effective, self-instruction must have ready access to materials, space, and practice time. (10) Certain packages, however, will not require special materials and could be used anywhere convenient to the student.

(11) The instructor must use his own unique abilities and perceptions when deciding upon appropriate utilizations of self-instructional packages by his students. The following items suggest alternative uses of these materials which an instructor might consider valuable in his program.

(12) 1. Catch-up work for students who fall behind, or are often absent.

(13) 2. Concentrated study in specialized areas for which the student has unusual ability or desire.

(14) 3. Independent research in areas of special interest (of considerable value within vocationally oriented subjects as well as arts areas).

(15) 4. Regular or occasional conversion of classroom into a learning center.

(16) 5. Deviation from set patterns to allow extra practice of prerequisites or practice of additional procedures (adaptation of practice to a variety of performance conditions, working environments and situations).

(17) 6. Career preparation to facilitate transfer of school-learned material into practical applications.

(18) One advantage of self-instructional packages is that they can be performed outside of class. It should be noted that in-class utilization is equally important. In-class time can be so arranged that students do not spend all their time in solitary work. Planned group instruction can be prepared for some students while others work individually, often in different locations in the same room. (19) Group work can be packaged work too. Utilization in group situations adds the following important values to instruction.

(?) 1. Students help each other at difficult points.

2. Students work cooperatively to make decisions.

3. Students give each other verbal feedback.

4. Students participate on a more active level (stimulate each other).

(21)5. Students can use packages which call for discussion.

6. Students can use packaged directions to prepare presentations (panels, forums, dramatizations, multi-media presentations).

7. Students in a group can perform for each other.

(22) Self-instructional strategies are primarily designed for use by individuals. The advantage of self-pacing is too valuable to be given up for group use without sufficient reason. A shortage of packaged materials is not sufficient reason unless the shortage was unavoidable and temporary. (23) Addition of some group advantages as listed above, may be sufficient reason to use self-instruction materials with groups, but the recommended procedure would be to prepare an alternate package designed for small group utilization. The aims of such packages would not stress development of individual skills, but rather, be one of two possible types.

(24) 1. Packages designed to guide students in group learnings, exchanges, sharings, experiences.

(25) 2. Packages designed to collect several different resources (slides, films, audio photographs) into a compact and easily-delivered program for use at the convenience of the group.

(26) The preceding suggestions for package implementation are beginning points for the instructor who seeks to provide his students with a varied and flexible program. That instructor will now examine the potential uses of packaged materials in his own program.

POST-TEST

1. List three post-test requirements which facilitate simple item analysis evaluation.

   1.

   2.

   3.

2. State the difference between the input information derived from post-test item analysis, and input from student evaluation forms?

3. Put a PT for post-test evaluation or a PE for package evaluation by each statement below.

   _____1. Requires a direct relationship between behavioral objective and evaluation item.

   _____2. Requires comparison groups of students including control groups, randomly assigned.

   _____3. Student input (an evaluation form).

   _____4. Measurement of student performance.

4. Listed are two areas which serve as sources of material for updating and refining packages. Add three more to this list.

   1. Learning research discoveries

   2. Educational technology developments

   3.

   4.

   5.

5. Write out briefly a procedure you would follow to prepare new input (from an assessment instrument) for incorporation into package revision.

6. YES or NO Do units in this New River Community College Program for Self-Instruction provide guidance for major package revision?

7. You are given one of the prime requirements for establishing appropriate practice conditions. Add two more to the list.

   1. Scheduled time allocations

   2.

   3.

8. List a minimum of three distinct ways in which self-instructional packages might improve a program for which you feel responsibility. (If you are already using them, try to list <u>additional</u> uses that might be advantageous in your program.)

9. Put an S by values <u>primarily</u> attributed to self-instruction. Put a G by values <u>primarily</u> attributed to group instruction.

   _____1. Students work in areas of their greatest need.

   _____2. Student's work is self-paced.

   _____3. Student work includes discussion.

   _____4. Students work alone.

   _____5. Students work cooperatively.

   _____6. Students stimulate other students.

10. From the following list of four purposes for packaging instructional materials, select the two which are least suitable for group utilization.

    _____1. Provide opportunity for student research in areas of special interest.

    _____2. Provide structure for an interchange of ideas.

    _____3. Provide an integrated delivery system of several diverse resources.

    _____4. Provide instruction at student's own pace.

POST-TEST ANSWERS

1. See Section 1, Steps for Evaluation, particularly 1, 2, and 3.

2. See Section 1, Student Evaluation Forms, particularly 2.

3. 1. PT, 2. PE, 3. PE, 4. PT.

4. (3) Subject or content developments

   (4) School environment developments

   (5) New resources/materials

5. Procedure should include:

   Translating new input into package related revision plans in some way. (notes? summary?)

   Setting priorities.

   Examination of package and/or decision-making.

6. Yes (specific unit locations in Unit III, and sub units on materials production in Unit II, Sections III and IV).

7. Two more are: Equipment availability and suitable space allocations. (Terms such as "materials" and "locations" are acceptable).

8. Answers will differ. Check for distinct uses.

9. 1. S, 2. S, 3. G, 4. S, 5. G, 6. G.

10. 1 and 4 least suitable group utilization.

EVALUATION OF THE LEARNING PACKAGE

Please make written comments on the total learning package. Use the brief checklist to evaluate the various aspects of the package.

Directions: Check the appropriate level (5 = high and 1 = low) relative to the various statements or questions.

Statement - Questions	5	4	3	2	1
1. What is your overall rating of this learning package?	___	___	___	___	___
2. How well were the objectives stated?	___	___	___	___	___
3. How well did the instructional sequence meet the objectives?	___	___	___	___	___
4. How well did you achieve the objectives as measured by the self-evaluation?	___	___	___	___	___
5. How clear were the instructions?	___	___	___	___	___
6. How effective would this package be in training teachers in the stated process skills?	___	___	___	___	___
7. How well were the evaluation items written?	___	___	___	___	___
8. What was your level of interest in the instruction as you went through the program?	___	___	___	___	___

Directions: Part II - Please write comments on the learning package. Include discussion on overall rating and why so rated; objectives; instructional activities; evaluation techniques.